Historic, archived document

Do not assume content reflects current scientific knowledge, policies, or practices.

aSF601
.A145

ERADICATION OF EXOTIC NEWCASTLE DISEASE IN SOUTHERN CALIFORNIA 1971-74

AGRICULTURE
RIC. LIBRARY
MAR 13 '78
CU... NT SERI... ...TION RECORDS

UNITED STATES
DEPARTMENT OF
AGRICULTURE

ANIMAL AND
PLANT HEALTH
INSPECTION SERVICE

APHIS-91-34

FEBRUARY 1978

CHRONOLOGY OF EXOTIC NEWCASTLE DISEASE IN THE UNITED STATES

Date	*Place of outbreak*	*Introduced by–*	*Outcome*
Apr. 1950	Contra Costa County, Calif.	Chukars and pheasants from Hong Kong.	No spread–eradicated.
Aug. 1970	Bronx, N.Y.	Quaker parrots from Paraguay.	No spread–complete die-off.
Aug. 1970	Clint, Tex.	Domestic chickens.	Spread to several area flocks–eradicated.
Sept. 1970	Blackstone, Mass.	Domestic chickens.	No spread–apparently self-limited by quarantine and die-off.
Apr. 1971	Las Cruces, N. Mex., and El Paso, Tex.	Domestic chickens.	Spread to several area flocks in isolated market area–eradicated.
Apr. 1971	Largo, Fla.	Mynah bird from Thailand.	No spread–all birds destroyed.
Sept. 1971	Dade County, Fla., and Sonoma County, Calif.	Domestic game chickens.	Spread to two flocks–birds destroyed.
Oct. 1971	Miami, Fla.	Commercial and game birds.	Limited spread–affected flocks destroyed.
Nov. 1971	Manchester, Conn.	Parrot from Paraguay.	No spread–birds destroyed.
Nov. 1971	Fontana, Calif.	Mexican double yellow-headed parrot from South America.	Extensive spread throughout southern California–all affected flocks destroyed and disease eradicated.
Dec. 1971	Puerto Rico.	Commercial and game chickens.	Puerto Rico placed under quarantine.
Feb. 1972	Chicago, Ill.	Parrot of unknown origin.	No spread–bird died.
Apr. 1972	Parker, Ariz.	Game chickens.	No spread–all affected flocks destroyed.
Apr. 1972	Atlanta, Ga.	Parrot from Mexico.	No spread–bird died.
May 1972	Kingman, Ariz.	Fancy chickens.	No spread–all affected flocks destroyed.
May 1972	Dade and Broward Counties, Fla.	Commercial and game chickens.	No spread–disease eradicated.
June 1972	Los Angeles, Calif.	Exotic birds from Thailand and transshipped through Los Angeles airport to Missouri, Alabama, and California.	No spread–disease eradicated.
July 1972	Los Angeles, Calif.	Exotic birds from Thailand and Colombia.	No spread–birds destroyed.
July 1972	Denver, Colo.	Parrot from Mexico.	No spread–bird destroyed.
Aug. 1972	Los Angeles, Calif.	Hummingbirds from Ecuador.	No spread–birds destroyed.
Jan. 1973	Los Ebanos, Tex.	Game chickens.	Limited spread–birds destroyed and disease eradicated.
Sept. 1973	Somerset, Ky.	Hatching eggs from Hungary.	Limited spread into Georgia, Kentucky, and Tennessee; birds destroyed–disease eradicated.
Feb. 1974	El Paso, Tex.	Domestic and game chickens.	Limited spread–birds destroyed and disease eradicated.
May 1974	Hidalgo, Tex.	Domestic chickens.	No spread–birds destroyed.
May 1974	Bulverde, Tex.	Parrots smuggled from Mexico.	No spread–birds destroyed.
March 1975	Long Island, N.Y.	Pet bird dealer.	No spread–birds destroyed.
June 1975	Pharr, Tex.	Domestic chickens.	No spread–birds destroyed.
Feb. 1977	Charlotte Courthouse, Va., and San Diego, Calif.	Pet birds.	Traced to 40 States and Puerto Rico–disease eradicated.
July 1977	Kaneohe, Hawaii	Pet birds.	Traced to aviary in Bakersfield, Calif.–disease eradicated.

CONTENTS

Page

Introduction 1

The poultry and pet bird industries in Southern California 2
  Egg production 2
  Broiler production 4
  Turkey production 4
  Backyard flocks 4
  Pet (exotic) birds 4
  Bird populations in the original outbreak area 5

Different forms of Newcastle disease 7
  Exotic Newcastle disease 7
  Domestic Newcastle disease 7

Events leading to declaration of emergency 8
  Background of exotic Newcastle outbreaks 8
  Plans for eradicating VVND 10
  The diagnosis 10
  California adopts regulations 11
  Initial eradication program 11
  Exotic Newcastle continues to spread 11
  Expanded State-Federal quarantines 13

National emergency declared (the declaration) 14

The Newcastle task force 14
  Organization 16
  Headquarters 16
  Field (area) offices 16
  Diagnostic laboratory services 18
  Task force ready for action 21

The three-pronged attack 22
  Depopulation of flocks—eliminating the virus 22
  Quarantine—containing the disease 28
  Vaccination—a two-edged sword 36

The sentinel bird program 42
  The sentinel birds 43
  Results of the sentinel bird program 46

Epidemiological necropsy surveillance (ENS) program 46
  ENS collection 47
  ENS diagnostic examination 47
  Results of the ENS program 47

Disease prevention program 48

Primary methods of disease spread 48

USDA, National Agricultural Library
NAL Bldg
10301 Baltimore Blvd
Beltsville, MD 20705-2351

CONTENTS (Con.)

Page

Other factors in disease spread 48
  Santa Ana winds 48
  Role of wild birds 50
  Insect vectors and rodents 50

Course of the outbreak 50
  Arizona outbreak 51
  Hatchery outbreak 51
  Tulare, Fresno, and Kings County outbreaks 51
  Seasonal decline 52
  Infection moves to Moorpark 53
  Egg City 53
  Further incidence of VVND 55
  Infection in Norco 55

Public meetings 56

Opposition to eradication efforts 57

Extraordinary emergency declared 60

Lifting of quarantine 60

Twelve-month surveillance 61

Lifting of extraordinary emergency 61

A look backward 62

Literature cited 63

Appendix A—Personnel data on Newcastle Task Force, March 14, 1972-June 30, 1974 64

Appendix B—Program standards for eradication of Exotic Newcastle disease 64

Appendix C—Summary of first, second and third round vaccination 70

Appendix D—Standard dead bird pickup procedures 71

Appendix E—ENS summary of activities, August 1972-June 1974 74

Appendix F—Disease prevention program 75

Appendix G—Infection found in Arizona 77

Appendix H—Data on wild birds 78

Appendix I—Sentinel bird placement summary 83

ERADICATION OF EXOTIC NEWCASTLE DISEASE IN SOUTHERN CALIFORNIA, 1971-74

INTRODUCTION

In March 1972, the United States faced its biggest animal health emergency in more than 40 years—an invasion of a foreign poultry disease. A little over 2 years later, in July 1974, the U.S. Department of Agriculture (USDA) and the State of California had succeeded in eradicating exotic Newcastle disease.

This disease, a foreign virus that kills poultry and other birds, had been introduced into southern California in November 1971 through imports of infected pet birds (1, 2, 3, 4, 5, 6, 7).[1] The disease moved rapidly through southern California's poultry-rich San Bernardino Valley despite efforts of State and Federal animal health officials in California to contain the outbreak. By March 1972, the disease threatened to spread throughout the country, endangering the Nation's $6 billion poultry industry.

Responding to the crisis, the Secretary of Agriculture on March 14, 1972, declared a national animal disease emergency. His action mobilized thousands of people and made Federal funds available to control and eradicate velogenic viscerotopic Newcastle disease (VVND).

The eight southernmost counties in California, covering an area of some 45,000 square miles, were put under State and Federal quarantine. A State-Federal Task

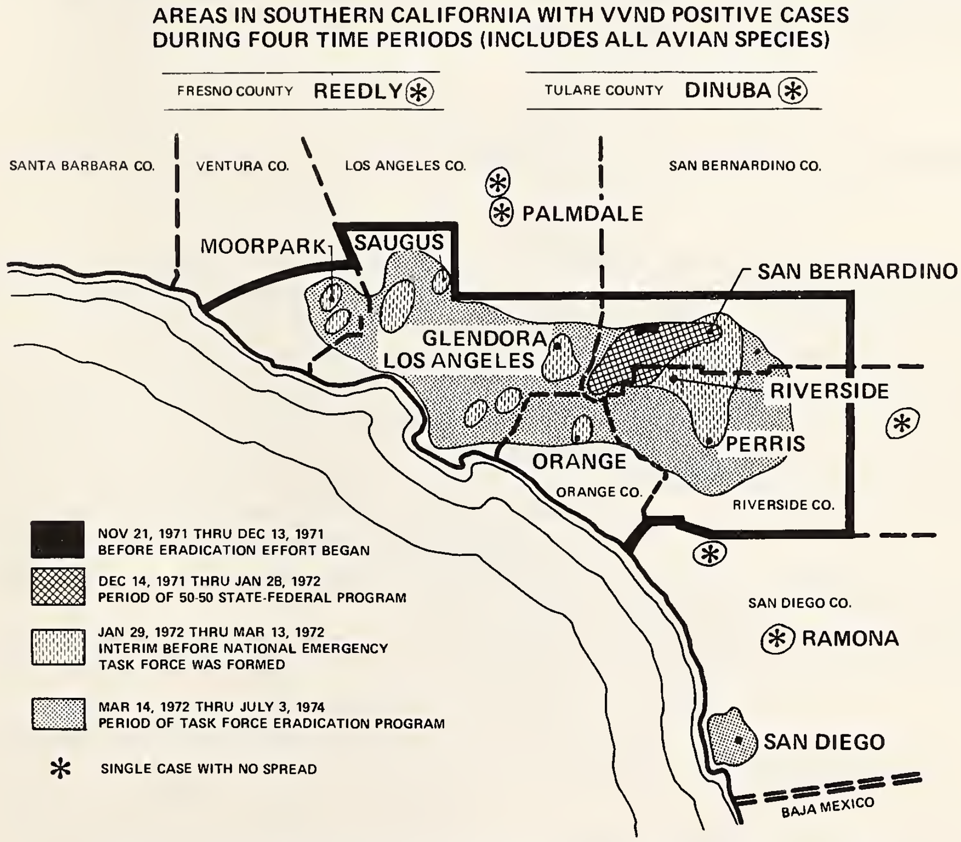

AREAS IN SOUTHERN CALIFORNIA WITH VVND POSITIVE CASES
DURING FOUR TIME PERIODS (INCLUDES ALL AVIAN SPECIES)
FRESNO COUNTY REEDLY
TULARE COUNTY DINUBA
SANTA BARBARA CO.
VENTURA CO.
LOS ANGELES CO.
SAN BERNARDINO CO.
PALMDALE
MOORPARK
SAUGUS
SAN BERNARDINO
GLENDORA
LOS ANGELES
RIVERSIDE
PERRIS
ORANGE
ORANGE CO.
RIVERSIDE CO.
SAN DIEGO CO.
RAMONA
SAN DIEGO
BAJA MEXICO
NOV 21, 1971 THRU DEC 13, 1971 BEFORE ERADICATION EFFORT BEGAN
DEC 14, 1971 THRU JAN 28, 1972 PERIOD OF 50-50 STATE-FEDERAL PROGRAM
JAN 29, 1972 THRU MAR 13, 1972 INTERIM BEFORE NATIONAL EMERGENCY TASK FORCE WAS FORMED
MAR 14, 1972 THRU JULY 3, 1974 PERIOD OF TASK FORCE ERADICATION PROGRAM
* SINGLE CASE WITH NO SPREAD

Figure 1.—Areas where exotic Newcastle disease occurred through four time periods.

---

[1] Underscored figures in parentheses refer to literature cited on page 63.

Force was organized to control the disease, with headquarters in Riverside, Calif., coordinating the campaign against exotic Newcastle were veterinarians and technicians from USDA's Animal and Plant Health Inspection Service (APHIS)[2] and California's Department of Food and Agriculture, Division of Animal Industry.

APHIS veterinarians, livestock inspectors, and support personnel from throughout the country were called on to join California and APHIS employees already on the scene. Temporary employees were hired. Personnel also came from the four military services (see pages 16-17). At peak strength, the Task Force numbered over 1,300 persons. The Task Force also received valuable cooperation from many different agencies such as other USDA agencies, other Federal agencies, universities, State Departments of Agriculture, the California and Arizona highway patrols, local law enforcement agencies, the California and Arizona highway departments, Agricultural Extension farm advisors, and members of Future Farmers and 4-H Clubs.

Eradicating VVND from the area required the destruction of nearly 12 million infected and exposed birds—mostly laying hens. The effort cost approximately $56 million. Almost half ($27.5 million) was for indemnities paid to flock owners for birds, eggs, and supplies destroyed.

The eradication campaign continued throughout 1972 and into 1973. The last case of exotic Newcastle in southern California was diagnosed on June 28, 1973. The Task Force continued a surveillance program for another year to make sure the disease had been eradicated. July 3, 1974, marked the successful conclusion of these surveillance efforts and the eradication campaign.

Figure 1 shows the areas where exotic Newcastle disease occurred through four time periods: (1) Before eradication efforts began, (2) the period of 50-50, State-Federal program, (3) the interval before the National Emergency Task Force was formed, and (4) the period of the Task Force eradication program.

What follows is the story of the eradication of exotic Newcastle disease in southern California, the people who fought the virus, and the methods they used to achieve eradication.

THE POULTRY AND PET BIRD INDUSTRIES IN SOUTHERN CALIFORNIA

At the time of the outbreak, southern California's poultry and pet bird industry was comprised of over 1,115 commercial flock operations—some located in isolated desert or mountain areas, but most grouped in small clusters around the edges of cities. Squeezed in and around some of the smaller and middle-sized cities were most of the 626 ranches that produced table eggs. They ranged in size from a few thousand laying hens to over 3.4 million birds. The average ranch contained 55,000 layers.

Figure 2 shows a breakdown of poultry and pet bird populations in southern California. In addition to these 1,115 flocks, there were 39,961 backyard flocks with almost 1 million birds in the eight-county area.

Egg Production

In 1971, California was the Nation's leading egg-producing State, with 12 percent of the Nation's eggs being produced within its borders. The State's 42 million laying hens annually produced a total of 9.2 billion eggs with a gross value of some $250 million.

About two-thirds of the State's laying hens were located in the eight southern California counties of Santa Barbara, Ventura, Los Angeles, Orange, San Bernardino, Riverside, San Diego, and Imperial. The greatest concentrations of these hens were in the San Bernardino Valley and in the coastal counties of San Diego, Orange, and Ventura. This concentration of egg production in southern California began during the late 1940's.

The dominant type of housing, developed in the 1930's, was the University of California chicken house. This housing allowed maximum exposure of all floor space to the sun. Southern California poultrymen shifted to this off-the-ground housing because it allowed better ventilation and allowed manure to drop to the ground where it dried away from contact with the laying hens. Manure could thus accumulate for some time before

---

[2] At that time, the agency was known as the Animal and Plant Health Service, (APHS), which had been formed in November 1971 from the regulatory functions of the Agricultural Research Service (ARS). In April 1972, the meat and poultry inspection functions of the Consumer and Marketing Service—now the Agricultural Marketing Service (AMS) of USDA—were added to APHS, and the agency was designated as the Animal and Plant Health Inspection Service (APHIS).

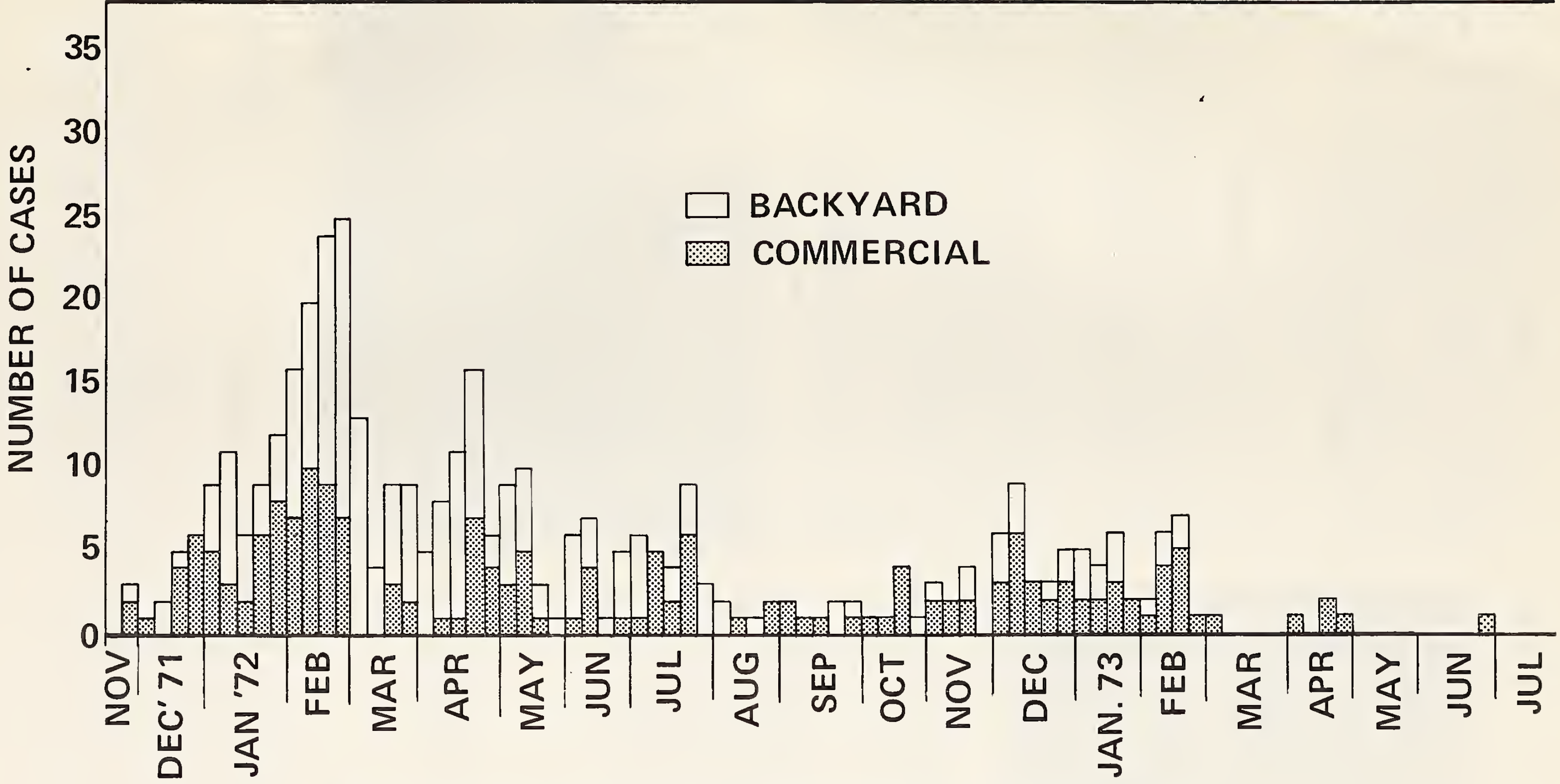


Figure 2.—Cases of VVND in Avian species in Southern California, by week, based on date first sick.

being removed, and it could be removed without excessively disturbing the birds.

0472x488-13

Typical housing in the southern California laying industry consisted of long, open-sided buildings with cages off the floor so manure could drop to the ground for later removal.

In the 1950's, later innovations included a switch to cage housing wherein automatic feeder chains and other mechanization helped to eliminate much of the hand labor in egg production. By the 1960's and early 1970's, most laying hens were housed in rows of relatively small wire mesh cages. Two to four hens were placed in each cage where they lived their productive lives.

Broiler Production

In 1971, broiler production in California amounted to about 89 million birds valued at $61 million. There were about 106 broiler flocks in southern California.

Turkey Production

In 1971, more than 17 million turkeys with a wholesale value of $95 million were marketed in California. The California turkey industry—concentrated in central and northern California—is world famous for its turkey breeding stock. The value of this genetic pool is priceless. Many years of effort and many millions of dollars had been invested to develop turkey breeds and strains that were shipped to every corner of the world.

Backyard Flocks

Sprinkled among the commercial ranches in southern California were 39,961 backyard flocks consisting mostly of chickens, but including every kind of poultry known to exist. Species included chickens, doves, ducks, geese, grouse, guinea fowl, partridges, peafowl, pheasants, pigeons, quail, swans, and turkeys.

Pet (Exotic) Birds

Southern California was also headquarters for breeders and importers of pet (exotic) birds such as parrots, mynahs, parakeets, and canaries. Several importers and 301 breeder flock owners supplied birds for local and worldwide markets.

Los Angeles was the Nation's leading center for importation of exotic birds, and the exotic bird industry was largely concentrated in the Los Angeles Basin. In 1971, the six leading southern California bird importers received 150,000 birds from foreign countries. One man alone imported 14,000 mynah birds. Imported birds usually were immediately resold to a variety of places, including some 50 wholesalers who supplied over 1,500 outlets throughout California.

0472x455-21

Southern California also had a large exotic bird industry.

Southern California was also the leading parakeet producer, raising 75 percent of the Nation's parakeets with a total annual production of about 3 million birds. A significant number of finches, canaries, cockatiels, and lovebirds were also raised each year. The area contained about 200,000 racing pigeons and many thousands of fancy pigeons. At least 14 public zoos, wildlife parks, and other large aviaries in the area had extensive collections of exotic birds.

Bird Populations in the Original Outbreak Area

Fontana—where the outbreak of exotic Newcastle disease began—had been a focal point for many of the changes within the southern California poultry and egg industry described earlier. At one time, Fontana was the center of a large poultry industry, where many families owned flocks of laying chickens varying in size from 500 to several thousand.

But as the poultry industry became more mechanized, these smaller, less efficient operations were no longer profitable. One by one, owners of small egg ranches found they could earn a better living at the new steel mill or with other industries being built within the community. As ranches went out of business, some were subdivided for construction of housing. On others, the old, rundown poultry houses were abandoned—unsuitable for modern commercial operations, but adequate to house the residents' backyard poultry operations. These varied from one or two chickens running loose to flocks of a hundred or more birds—chickens, turkeys, ducks, pheasants, quail, and peafowl—alone or in combination. Ownership of unconfined birds was not always clear and—after several generations—the offspring of casual matings were often more or less the property of the general community. These birds now roosted in the trees, on top of buildings, or out in the citrus groves.

Nevertheless, egg production was still an important part of the Fontana economy in the early 1970's. For although the days of the "family" chicken ranches were gone and—almost—forgotten, planning commissions had allowed the community to remain zoned for agriculture. This ruling, along with the fact that poultry services were already available in the area, had attracted the new efficient egg-production ranches that were being built in the 1960's. Most of these large, new ranches consisted of a series of long, open sheds—roofs, supported by poles, with open sides and ends. Inside, laying hens were confined in rows of elevated cages.

But laying chickens were not the only birds that made their home in Fontana. The area's climate was not too cold for tropical birds, and nearly 50 parakeet breeding farms were located within and around Fontana. In addition, several importers of parrots, mynahs, macaws, and other exotic birds had chosen this area for their base of operation.

Among the backyards, egg ranches, and exotic bird producers of Fontana were one more group of "aviaculturists"—breeders of fighting cocks. Although cockfighting is prohibited in California, it is legal in Arizona and other States; and many of the game chickens raised in the area were for shipment to Arizona, Hawaii, and the Philippine Islands.

This, then, was the region where the most serious animal or poultry disease outbreak in more than 40 years occurred—with its beginning in a 30-square-mile area of concentrated poultry and other birds in and around the city of Fontana. In reality, Fontana was in the center of one, single, enormous flock of 2 million birds—with over a thousand owners.

0472x470-13, 0472x482-23

Fontana—where the outbreak began—was "home" for birds of all kinds and shapes, ranging from backyard flocks of chickens to aviaries and pet shops to commercial laying operations.

DIFFERENT FORMS OF NEWCASTLE DISEASE

There are four forms of Newcastle disease: the velogenic viscerotropic form or exotic Newcastle, and the velogenic neurotropic, the mesogenic, and the lentogenic forms.

All four are caused by viruses that are morphologically indistinguishable. The degree of pathogenicity varies from the lethal forms, characterized by enteric lesions and respiratory symptoms or disturbances of the central nervous system, to the mild forms that may cause respiratory symptoms or no symptoms at all.

To diagnose and differentiate VVND from domestic Newcastle disease, laboratory tests are needed. Such tests involve a post-mortem examination of the birds, followed by embryo inoculations and laboratory tests to isolate and identify the virus.

VVND can be confused with other poultry diseases such as laryngotracheitis, aflatoxin poisoning, acute pasteurellosis, trichomoniasis, candidiasis, coccidiosis, enterohepatitis, fowl plague, and vitamin A deficiency.

Exotic Newcastle Disease

The VVND virus attacks the viscera or internal organs and kills birds rapidly. Young chickens are particularly vulnerable. Although the most noticeable signs are in the digestive tract, the heart, liver, and kidneys are also affected. VVND usually produces marked congestion in the trachea, ulcers and erosions on the soft palate and upper esophagus, and inflammation and hemorrhage in the proventriculus.

Chickens infected with exotic Newcastle virus sometimes die before signs of the disease appear. Death can occur any time after the first symptoms of depression. The birds:

- Often first appear listless, with heavy breathing
- Become progressively weaker
- Commonly have watery, greenish diarrhea, which sometimes is bloodstained
- Have swelling of the head, especially around the eyes, producing a slight darkened discoloration of the tissues around the eyes—or "black eyes"

One of the first signs of VVND in laying flocks is a sudden drop in egg production; some birds quit laying altogether. Sick and recovered birds often produce malformed eggs with defective eggshells. Egg yolks are flabby, bloodspotted, and generally of poor quality. In some cases, the disease may cause a hen's oviducts to rupture, with resultant peritonitis.

Domestic Newcastle Disease

Domestic Newcastle disease causes paralysis more frequently in chicks and broilers than in layers. In laying flocks, death rates from domestic Newcastle disease are much lower than from exotic Newcastle. The signs of

0472x483-25, 0472x483-4

These chickens, infected with exotic Newcastle disease, show the nervous and respiratory signs of this foreign virus disease.

domestic Newcastle disease in turkeys are similar to those in chickens, but generally are less severe.

The domestic Newcastle, different from the exotic Newcastle, is caused by the endemic velogenic, mesogenic, or lentogenic strains of the virus. More specifically:

- The velogenic form, usually an acute infection in chickens and turkeys of all ages, affects the respiratory tract and nervous system. This form can produce heavy death losses but, unlike VVND, it does not produce hemorrhages of the digestive tract.
- The mesogenic form, a less acute respiratory-nervous infection, sometimes kills young chickens but rarely kills older birds. Some vaccines are produced from these strains.
- The lentogenic form, a mild respiratory infection, rarely causes death in birds of any age. This form is also used in making less virulent Newcastle vaccines.
- Both the velogenic and mesogenic forms decrease egg production in laying flocks and retard the growth rate of broiler chickens and roasting turkeys.

The signs of domestic Newcastle include:

- Difficult respiration
- Inactivity and weakness
- Nervous disturbances—head tremor, twisted neck, and paralysis of the wings or legs

EVENTS LEADING TO DECLARATION OF EMERGENCY

Beginning in 1950, a number of outbreaks of exotic Newcastle disease occurred in the United States. A chronology of such outbreaks, their causes, and their outcome are presented inside the front cover page. More detailed events are described below.

Background of Exotic Newcastle Outbreaks

Newcastle disease was first recognized almost simultaneously in three widely separated locations in 1926—England, Java, and Korea—and within a year in India and the Philippines. The outbreak in England occurred on a poultry farm near Newcastle-on-Tyne—from which the disease got its name. The disease was highly fatal to poultry. During the next 15 years, virulent Newcastle disease spread throughout Asia and reached east Africa and southern Europe.

In the 1930's and early 1940's, less virulent forms of the disease also spread throughout the world. Although these milder forms were first identified in the United States in 1944, scientists believe they may have been here as early as 1935.

In 1950, the first case of VVND in the United States was introduced by chukar partridges and pheasants imported from Hong Kong into California. The infection, which spread to five poultry farms in Contra Costa County, was quickly eliminated through the destruction of the infected chickens at a cost of about $30,000.

By 1960, much of the Newcastle disease found in most of the world's poultry areas appeared to be the milder forms; however, the virulent exotic Newcastle form was still present. By the midsixties, the virulent form of the disease was again on the move, spreading through much of Asia, the Middle East, Europe, and Latin America.

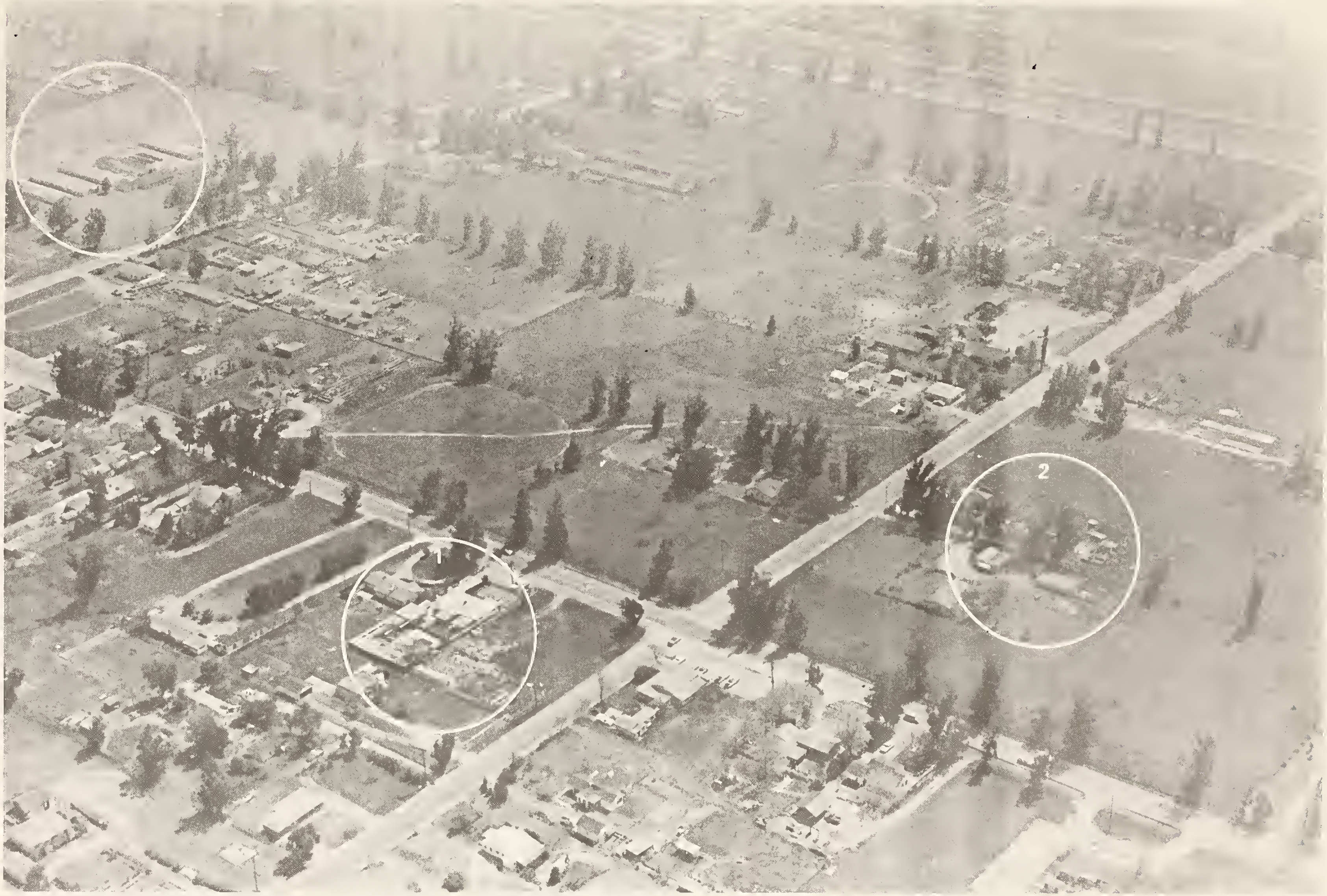
By the 1970's, the United States was also touched by exotic Newcastle disease. Isolated cases occurred in imported pet birds in 1970 and 1971, but in each instance the disease was quickly eliminated.

VVND struck commercial poultry flocks in this country in August 1970 and in April 1971 in an isolated market area in El Paso, Tex., and Las Cruces, N. Mex. In these circumstances, a system of vaccination and revaccination and elimination of older birds succeeded in eradicating the virus.

In September 1971, VVND caused the death of some fighting chickens in Sonoma County, Calif. These birds had been purchased from a breeder near Miami, Fla. The following month the disease was diagnosed in a 10,000-bird commercial egg-laying flock in Miami, where 7,000 hens had died within a few days. The remaining birds were destroyed.

Animal health officials found in their investigation that contact between this flock and the Florida fighting cock premises caused the Sonoma County, Calif., outbreak. These officials consistently heard of contact between Florida and Puerto Rico breeders of fighting cocks. By December, a number of VVND cases had been confirmed in Puerto Rico and on January 11, 1972, the Commonwealth of Puerto Rico was placed under Federal quarantine.

In November 1971, VVND was diagnosed twice—with both introductions traced to imported pet birds. One case involved a parrot brought into Connecticut from Paraguay where all birds in the pet store died. There was



0374x369-7A

This aerial view of Fontana pinpoints (circled areas) the location of the pet bird importer (1), the first backyard flock (2), and the first commercial flock (3) to become infected.

no spread of the disease. The other case involved a more serious consequence—extensive spread and the Declaration of a National Emergency.

A shipment of Mexican double yellow-headed parrots from South America was transported to a pet bird importer located in the city of Fontana, San Bernardino County, Calif. Security at this importer's premises was lax. Poultry owners in the Fontana area reported that during October and November some exotic birds had escaped. Free-flying exotic birds were a common sight in the neighborhood; in one instance, the carcass of an exotic bird killed by a cat was found on a neighboring poultry ranch—one of the first infected with VVND.

VVND evidently spread from the Fontana importer's premises into the dense population of backyard flocks and commercial poultry flocks in this area. The first diagnosis of VVND was made during the last week of November in chickens from a small backyard flock—100 chickens and 16 turkeys—located about two blocks from the importer. Two nearby commercial poultry flocks were also experiencing heavy death losses, and VVND was diagnosed in both. From these origins, the disease spread rapidly within the Fontana area.

Plans for Eradicating VVND

Because of sporadic outbreaks of VVND in the United States (*see* inside cover page), USDA officials and a group of poultry research scientists on August 31, 1971, met in Beltsville, Md. At this meeting, the world Newcastle situation, the previous introductions into the United States, and the continuing threat were thoroughly reviewed. General recommendations were drawn up for eradicating exotic Newcastle disease should it be introduced into this country's poultry industry. These basic recommendations were the foundation for the eradication program that evolved in the United States.

Following the scientists' meeting on August 31, a series of 16 meetings were held with poultry industry representatives throughout the country to discuss the seriousness of the situation. The first meeting was in Beltsville on September 2, 1971. Fifteen similar meetings were held during the next 2 1/2 months in Texas, Florida, Ohio, Mississippi, Iowa, Georgia, California, North Carolina, Minnesota, Arkansas, and Illinois.

At these meetings, representatives of the poultry industry, the pet and exotic bird importing industry, and the zoo industry met with State and Federal animal health officials. The purpose was to orient people within the various industries to the seriousness of a VVND outbreak and to get their opinions as to how the problem should be handled.

In addition to public meetings, numerous private meetings between USDA officials and industry representatives were held to work out regulatory problems in containing and eradicating VVND.

The Diagnosis

It was approaching 5 p.m. on Friday, November 26, 1971, and employees of the California State Animal and Poultry Diagnostic Laboratory in San Gabriel, having completed their work for the week, were getting ready to leave for the weekend. Just before closing time, the owner of a backyard poultry flock in Fontana arrived with three dead chickens. He wanted to know if his poultry had been poisoned. Only a week before he had 100 chickens and 16 turkeys; now, only 6 chickens and 2 turkeys were alive—and they were sick.

Although it was late, the director of the laboratory performed necropsies on the dead chickens. Lesions suggesting velogenic viscerotropic Newcastle—the exotic form of the disease—were found in all three birds.

Two commercial poultry ranches in Fontana were experiencing heavy death losses during this same period. Signs of the sickness included swollen heads, diarrhea, depression, and serious respiratory distress. Early the following Monday morning, the owner of one of these ranches brought several chickens to the San Gabriel laboratory.

This case was assigned to a diagnostician who was a native of the Philippines and had received his veterinary education there. After performing post-mortem examinations, he recognized lesions typical of the many VVND cases he had observed while working in the Philippines.

Lesions of the birds brought in Friday and the following Monday were compared, and egg embryos were inoculated. Early embryo deaths followed by positive hemmaglutinin (HA) and hemmaglutinin-inhibition (HI) tests added to the earlier suspicions that the disease was indeed exotic Newcastle. Specimens of the virus isolations were immediately flown to the University of Wisconsin, Madison, for virus characterization. There, inoculation into susceptible chickens produced visceral lesions and rapid death.

The diagnosis of VVND was confirmed in early December 1971. Exotic Newcastle disease had again entered the United States; but, unlike previous introductions, this time the disease would not be quickly or easily stamped out. Instead, a long, hard fight lay ahead.

California Adopts Regulations

Both State and Federal animal health officials were notified of the suspected VVND outbreak. After receiving official confirmation of the diagnosis from the University of Wisconsin, the California Department of Food and Agriculture, on December 13, 1971, placed a State quarantine on a 36-square mile area in Fontana where VVND was first diagnosed.

Along with the quarantine, California adopted regulations calling for the confinement of all avian species when required; the vaccination of poultry; the depopulation of infected and exposed birds; the disposal of carcasses; and the cleaning and disinfecting of premises under official supervision (*see* p. 69, Appendix B). Infected premises had been under individual premises quarantines before the area quarantine was imposed.

Initial Eradication Program

On December 14, 1971, USDA adopted regulations permitting the Federal Government to cooperate with California, as well as Florida, New Mexico, and Texas. The latter States also had been subjected to outbreaks of VVND. The regulations provided for the initiation of cooperative State-Federal eradication programs. Cost was to be shared equally by the State and Federal Governments.

The cooperative State-Federal eradication program in California began with 26 people and limited State funds. At this point, there were 7 known infected flocks and an additional 21 flocks considered to have been directly exposed to the disease. About 30,000 chickens were involved. By December 18, VVND had been diagnosed in 4 additional flocks, bringing the total infected to 11—plus the 21 exposed flocks. A vaccination program was initiated.

Investigation of the source of the outbreak by State and Federal epidemiologists pointed to the importer in Fontana as the focal point of infection. An investigating veterinarian had reported on December 9 the deaths of several parrots at the Fontana aviary. The next day the San Gabriel laboratory isolated VVND virus from a parrot that had arrived at the importer's premises in a December 7 shipment.

At the same time, deaths among exotic birds at a retail store in Los Angeles were being investigated. Lesions suggestive of VVND were seen in a cockatiel from the store submitted to the San Gabriel laboratory by a veterinary practitioner, but efforts to isolate the virus were unsuccessful. Further investigation showed the retailer had purchased exotic birds from the Fontana importer on several occasions during October and November 1971.

Later, as the investigation continued, an epidemiologist discovered a freezer on the premises of the Los Angeles retailer in which the owner had carefully preserved a mixed batch of 47 dead birds. On December 21, 1971, exotic Newcastle disease virus was isolated from several of these specimens by the San Gabriel laboratory.

On December 23, 1971, Federal quarantines restricting the interstate shipment of eggs, poultry, and poultry products were placed on the same areas in California covered by the State quarantine.

To slow the spread of infection and provide some protection to susceptible flocks in the southern California outbreak area, an emergency vaccination program in backyard flocks was completed in the quarantine area by January 14, 1972. Vaccines reduced, but did not stop, mortality in infected flocks.

Exotic Newcastle Continues to Spread

During late December 1971 and early January 1972, the Santa Ana winds roared down from the high desert through the Cajon Pass in the San Gabriel Mountains to the north of the outbreak area. Fontana was directly in the path of these Santa Ana winds, which could reach velocities of 60 miles per hour for days on end. Egg flats, cartons, feathers, and even live chickens were scattered over long distances. During some of these windstorms, cages containing imported birds would be damaged—and pieces of metal and wood would blow off the old poultry houses—allowing both exotic birds and domestic poultry to escape.

From December 19, 1971, to January 15, 1972, VVND spread rapidly—mainly within a 2-mile area south of Fontana. In two instances, the disease appeared farther away—in a small layer flock several miles south in Riverside County and in a pheasant ranch east of San Bernardino. A total of 43 infected and 23 exposed flocks had been detected.

By January 16, 1972, VVND surfaced outside the quarantine area. Outbreaks occurred to the west in the Ontario-Chino area and to the south in Riverside County near Mira Loma. Investigators believed this spread was probably caused by movement of people, birds, and equipment.

As a result of this spread, on January 18, 1972, the State of California extended its quarantine area to include 20 square miles of San Bernardino County and about 10 square miles in Riverside County. Federal quarantines were placed on the same area 10 days later.

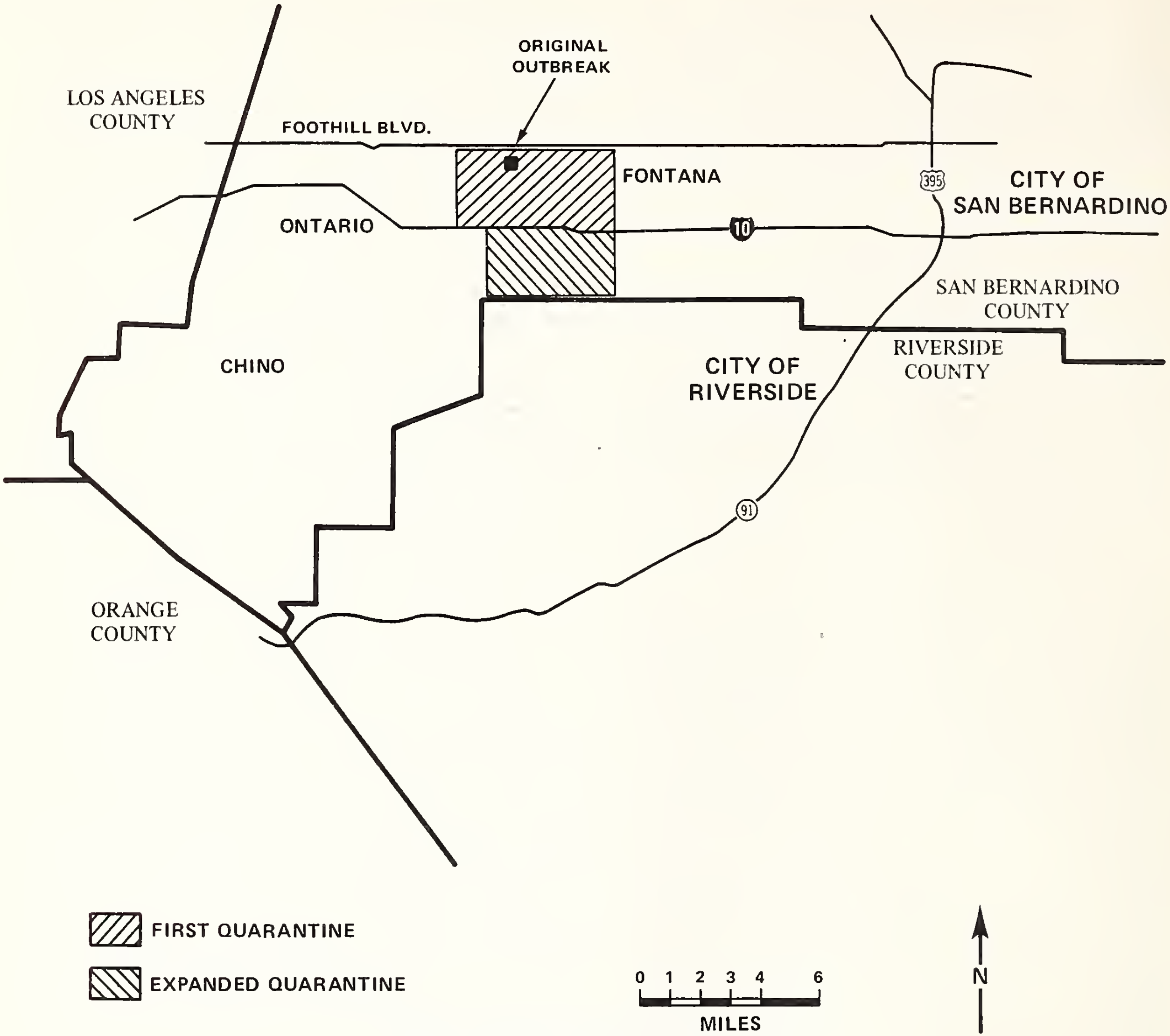


Figure 3.—Original outbreak and quarantine area.

Spread in the ensuing 2 weeks was explosive. By January 28, an additional 21 infected flocks and 9 exposed flocks were discovered, including many large commercial laying operations. Most of this spread was 10 to 20 miles south of the original Fontana outbreak.

On February 8, 1972, despite the continuing spread of VVND, the initial State-Federal eradication program was suspended. By this time, 313,848 birds had been depopulated and indemnity costs—shared equally by the State of California and the Federal Government—of $515,800 had been paid. The original $400,000 in funding committed by the State had been overextended. Still, several large commercial infected flocks had as yet been neither appraised nor destroyed.

At this point, destruction of infected and exposed flocks was discontinued. Cleaning and disinfecting came to a halt. Owners were encouraged to vaccinate and to report suspicious illness.

During the interval between the end of the early eradication program and the Declaration of Emergency, diagnosticians continued to search for flocks infected with VVND. As each diseased flock was found, the premises were placed under a State quarantine, although table eggs were permitted to move to processors and slaughter of the poultry was allowed within southern California. Movement of poultry from noninfected and nonexposed ranches was not restricted unless these poultry originated from within the quarantine area.

Owners were advised to protect their flocks by excluding all unnecessary people from their premises. Representatives of APHIS and the California Bureau of Animal Health advocated vaccination of all poultry. Agriculture Extension farm advisors also encouraged all poultry owners to adopt a Newcastle vaccination program. Members of Future Farmers and 4-H Clubs participated in a campaign to vaccinate backyard flocks in affected areas. Most commercial flocks received at least one vaccination.

For 5 weeks no infected flocks were destroyed. While State and Federal veterinarians were forced into a holding action, VVND continued to spread. The disease had crossed the quarantine line in many places and was out of control. This spread involved most major poultry areas in southern California.

On March 1, 1972, APHIS officials met in Washington, D.C., with representatives of the poultry industry to determine the future course of the Department of Agriculture. Over 60 persons attended, including representatives of the poultry industry from California and other areas of the country, State and Federal animal health officials, and poultry research scientists.

The consensus was that VVND could not be allowed to spread throughout the country and jeopardize the Nation's $6 billion poultry industry. If the disease were allowed to spread, losses to the industry during the first year would be in excess of $230 million.

Based on recommendations from members of this meeting and from a group of scientific advisors,[3] the decision was made to eradicate the highly contagious exotic Newcastle disease from southern California. Plans were laid for the eradication effort. Many questions had to be answered: How much would the effort cost? What role would the State of California play? What kind of organization was needed to carry out the eradication campaign? How many people would be needed? Where would they come from? What quarantine and import regulations were needed? Under what authority would the eradication effort be carried out?

Expanded State-Federal Quarantines

To prevent further spread of VVND and as a prelude to the emergency action, the U.S. Department of Agriculture and the California Department of Food and Agriculture, on March 10, 1972, jointly placed a quarantine on all eight southern California counties (Santa Barbara, Ventura, Los Angeles, Orange, San Bernardino, Riverside, San Diego, and Imperial). This quarantine covered over 45,000 square miles of desert, city, mountains, and coastal plains stretching from the Mexican border, north to the Tehachapi Mountains, east to the Arizona State line, and west to the Pacific Ocean.

The same day (March 10) the U.S. Department of Agriculture placed emergency restrictions on the importation of psittacines (parrots, parakeets, and related birds) and greater and lesser hill mynah birds—the types of birds that had been implicated in earlier introductions of VVND.

---

[3] A group of internationally recognized poultry experts served as scientific advisors to USDA on exotic Newcastle disease. This group included B. S. Pomeroy (chairman), University of Minnesota; R. A. Bankowski, University of California; Robert P. Hanson, University of Wisconsin; Steven B. Hitchner, Cornell University; Harry Goldstein, Ohio Department of Agriculture; Leland Grumbles, Texas A&M University; and Frank R. Craig, Perdue Farms, Salisbury, Md.

NATIONAL EMERGENCY DECLARED (THE DECLARATION)

The rapid spread from the original quarantine area in southern California and infection or exposure of some 225 flocks demonstrated the seriousness of the outbreak. If exotic Newcastle disease were allowed to go unchecked, the entire U.S. poultry industry would be in jeopardy. Therefore, acting under provisions of the Plant and Animal Disease and Pest Control Act of May 29, 1884, as amended, Secretary of Agriculture Earl L. Butz on March 14, 1972, declared exotic Newcastle disease to be a national emergency. He stated:

> "I find an emergency arising out of the existence and spread of exotic Newcastle disease, which constitutes a threat to the poultry industry of the country, and I hereby authorize the transfer from other appropriations or funds available to the agencies and corporations of the Department such sums as may be necessary for all proper purposes . . . to control and eradicate the disease wherever found."

At this point, USDA's Commodity Credit Corporation (CCC) made $10 million available for use in a cooperative campaign with the State of California to:

- Eliminate all infected and exposed flocks with indemnity.
- Supply vaccines and conduct a supervised vaccination program in the quarantine area.
- Establish headquarters in the area to coordinate the eradication campaign.

With these funds available, the State-Federal Newcastle Task Force was organized. The Declaration of Emergency authorized USDA to pay all indemnities and other costs arising from the depopulation (destruction) of large numbers of poultry and other birds. The State of California furnished personnel, supportive services, and other resources for its share of program costs.

Personnel data for the exotic Newcastle disease Task Force from March 14, 1972, to June 30, 1974, are presented in Appendix A (*see* p. 64).

THE NEWCASTLE TASK FORCE

Anticipating the Declaration of Emergency, top Federal animal health officials from Washington, D.C., met at Hyattsville, Md., on Saturday, March 11, 1972, to organize the Task Force and plan its strategy. Vaccination recommendations were drawn up and finalized. Press releases explaining the emergency action were drafted. Task Force personnel were selected.

On March 12, a vanguard of key Federal Task Force personnel, drawn from various parts of the country, assembled in the State Office Building in San Bernardino, Calif. On Monday, March 13, the new arrivals met with State and Federal animal health officials in California. Thirty-five veterinarians and seven livestock inspectors, along with support personnel, attended the organizational meeting.

Following the March 14 Declaration of Emergency, a news conference for press and industry was held in San Bernardino, at 10 a.m., on March 15. The Declaration of Emergency was explained. Details were revealed on the Task Force's plan to contain and eradicate VVND in southern California by quarantines and other actions, such as resuming the depopulation of infected and exposed flocks. Some poultrymen whose flocks were under quarantine learned for the first time at this meeting that their flocks would be destroyed and they would receive indemnities for their birds.

Several poultrymen present at the morning briefing insisted upon an afternoon meeting with the Task Force coordinators. They feared they would be out of business permanently if the emergency program went into effect and infected flocks were destroyed. At the time, many were near bankruptcy because of low egg prices.

Some poultrymen, along with representatives of the egg marketing associations, also became concerned that, because of publicity on the outbreak, consumers would quit eating eggs and poultry products for fear of contracting the virus. Members of the Newcastle Task Force, through the media and in response to questions, continually emphasized that exotic Newcastle did not pose a hazard to consumers of eggs and poultry meat. The California Department of Public Health issued similar statements designed to quiet this concern.

Nevertheless, the mere mention of a disease problem in connection with poultry—in the stories about the beginning of the emergency operations to eradicate exotic Newcastle—probably had some effect on consumption of eggs and poultry products. The fact that eggs were at extremely low prices at this time no doubt

0472x492-13

0472x492-22

0472x491-5

Headquarters for the newly formed Task Force was established in a motel at Riverside, Calif. Here, maps showing the progress of the eradication campaign were kept up to date (top) and teams of workers planned their activities (center, left). Daily staff meetings (center, right) helped provide internal communications. Activities of the Task Force attracted wide media coverage, including both local and network television newscasts (bottom).

0472x493-28

accentuated the concern of certain segments of the poultry industry about consumer reaction to the VVND outbreak.

Organization

Headed by a Task Force Director (a member of the Federal Government) and an Assistant Director (a member of the California Bureau of Animal Health), the nucleus of the Task Force consisted of three major support elements—administration, field operations, and technical support staff. Attached to the Director's office was information support, military liaison, wildlife, and legal help.

Administration

The administrative officer was responsible for all headquarters' functions assigned to administrative management, such as hiring, staffing, timekeeping, payroll, vouchers, and travel. Other functions under his supervision were:

- A procurement section to acquire supplies.
- Communications (telephone, telecopier, and program reports).
- A vehicle section for the dispatch and maintenance of all General Services Administration (GSA), APHIS, and commercial rental vehicles.

Field Operations

Field operations was headed by an operations chief who was responsible for all field activities, such as diagnosis and inspection, appraisal and indemnity, depopulation and disposal, regulation enforcement and quarantine, disease prevention, vector control, and cleaning and disinfecting ranches, vehicles, and all equipment in contact with contaminated materials. A major undertaking under field operations was the vaccination of all commercial and backyard flocks.

Technical Support Staff

The technical support staff was responsible for obtaining technical data on VVND to support field activities. An epidemiology section gathered and evaluated disease data and recommended program changes. This staff also coordinated training, vaccination evaluation, and disease reporting. In the later stages of the program, an economist supervised the gathering of information on production costs and prices paid for eggs for use in a supplemental indemnity program.

Headquarters

The Newcastle Task Force was headquartered at a large motel complex within the city of Riverside, Riverside County. This site was close to a number of freeways, which allowed quick access and communication with surrounding areas. Most of southern California's poultry industry was within 60 miles of this central location.

Field (Area) Offices

Field (area) offices were established in Carpenteria (serving Ventura and Santa Barbara Counties), Pico Rivera (serving Los Angeles and Orange Counties), San Bernardino (serving San Bernardino County), Riverside (serving Riverside County), San Diego (serving San Diego County), and El Centro (serving Imperial County).

In addition to six field offices covering specific counties within the eight-county quarantine area, a mobile headquarters was set up at Victorville, Calif., to handle isolated outbreaks outside the quarantined area.

These six area offices, staffed by administrative and professional personnel, directed hiring, training, and assigning vaccination crews. A major problem was finding experienced supervisory personnel to direct the activities of the large numbers of temporary employees who were being hired.

Therefore, in accordance with an agreement signed by USDA and the Department of Defense (DOD), a request was sent to DOD for 40 veterinary officers and 160 noncommissioned officers for detail to the emergency operations in California.[4] DOD responded immediately. During the emergency program, a total of 403 military personnel were detailed. Of this total, 137 were veterinarians from the Army and Air Force, and 266 were noncommissioned officers from the four services (Air Force, 70; Army, 73; Marine Corps, 55; and Navy, 68). Most of the NCO's served as supervisors for the survey and vaccination crews, with crew members hired locally on temporary appointments.

0472x490-7

Veterinarians and noncommissioned officers from all four branches of the armed forces provided needed manpower for the Task Force.

0472x489-9

Most of the noncommissioned officers furnished by the military served as supervisors for the survey and vaccination crews who had been hired locally on temporary appointments.

---

[4] Initially, the military help consisted of 20 Air Force and 20 Army veterinarians, plus 160 noncommissioned officers from all four branches of the service. The officers were assigned to the Task Force for periods of 2 weeks to 2 months, while noncommissioned officers served 30- to 60-day tours of duty. Military support for the Task Force was phased out in mid-September 1972. Military personnel were directly responsible to a military support officer who, in turn, was directly responsible to the Task Force Director. Veterinary officers worked in disease investigations, diagnosis, epidemiology, and surveillance. The noncommissioned officers worked as supervisors of vaccination teams, for blood sampling of hatchery chicks, surveillance, quarantine enforcement, and issuing of permits. This was the first time in USDA history that NCO's with no medical background had been used effectively in disease surveillance and vaccination roles, and to supervise civilian employees in an emergency situation.

Diagnostic Laboratory Services

Diagnostic laboratory services were conducted at the California Department of Food and Agriculture diagnostic laboratory at San Gabriel. This laboratory—one of five such diagnostic laboratories in California—had been in operation for over 20 years and was one of the largest, best equipped, and most adequately staffed in the United States. In August 1972, when workload at the laboratory exceeded available space, a branch laboratory was established not far from Task Force headquarters at March Air Force Base, Riverside. Here, water, sewage capacity, and electricity were adequate. For security, a 6-foot fence was erected and high intensity lights installed to illuminate the area at night.

Six 10- by 50-foot mobile house trailers were rented and installed at March Air Force Base, near Riverside, Calif., in August 1972 to beef up laboratory capability.

Six mobile house trailers, 10-feet by 50-feet, were rented and installed within the security area. Laboratory equipment was installed in each trailer according to the type of work to be conducted in the trailer as follows:

Trailer 1—Specimen collections and necropsy examination.
Trailer 2—Embryo inoculation and incubation.
Trailer 3—Harvesting chorioallantoic fluid.
Trailer 4—Entry-exit showers and change of clothes, plus offices and storage space.
Trailer 5—Biologically secure (disposable virus-tight) cages where all inoculated birds were held until death or 10 days after inoculation. Studies with wild birds and insects were also conducted.
Trailer 6—Same as 5 above.

Diagnosis

The diagnosis of VVND was based on flock history, necropsy examinations, and laboratory results. Diagnosticians evaluated lesions suggestive of VVND and classified these lesions as positive, suspicious, or negative. In some instances the disease was being masked by vaccination, with circulating antibodies in the blood partly protecting the birds. Birds with masked disease could replicate virus in the epithelial cells of the respiratory and gastrointestinal tracts and continue to release large quantities of highly infective virus, even though they were not obviously sick. As these birds did not show obvious clinical signs of the disease or typical lesions on necropsy, additional diagnostic procedures were needed to detect VVND.

The sentinel bird program (*see* p. 42) and the Epidemiological Necropsy Surveillance (ENS) program—better known as the dead bird pickup (*see* p. 46)—were introduced to help detect presence of the VVND virus in vaccinated flocks.

Diagnostic Procedures

Sick or dead birds were routinely submitted to the Animal and Poultry Diagnostic Laboratory, San Gabriel. The laboratory examination consisted of three stages: (1) Necropsy examination, (2) virus isolation, and (3) identification and characterization of Newcastle disease viral isolates as either velogenic viscerotropic or endemic strains.

A minimum of 5 to 7 days were required for isolation, identification, and characterization in the laboratory. Laboratory tests, flock history, clinical signs, and post-mortem lesions were all considered in arriving at a diagnosis of VVND.

Necropsy examination.—All birds submitted to the laboratory were necropsied. Specimens were collected from trachea, cloaca, brain, spleen, and lung for testing. Early in the program, tissues were ground with a mortar and pestle. However, it was learned that a twisted wire loop was more efficient for transferring materials containing the virus from a specimen to a brain-heart infusion (BHI) broth which would be inoculated into embryos. The use of the wire loop resulted in transfer of adequate amounts of tissue fluids containing virus with less cell debris and bacteria.

Necropsy technicians confirmed identification of specimens and submission records, opened the birds, and used the wire loops for transferring tissue fluids from appropriate organs to BHI broth for embryo innoculations. Veterinarians with specialized training in poultry diseases assessed the lesions.

Virus isolation.—Specimens from up to five birds from the same premises were pooled together in a 2 ml vial of BHI broth for maximum utilization of embryos. To the broth, 10 percent lamb serum was added to protect the virus during transportation and storage while awaiting inoculation. To reduce bacterial contamination, 10,000 units of penicillin and 10 mg of streptomycin were added to each milliliter of broth.

Swabs from the same organs from up to five birds were pooled together, but swabs from different organs were not pooled, except from the lung and spleen. Four vials, each containing 2 ml of BHI broth, were used for each submission: (1) one for brain swabs, (2) one for cloaca swabs, (3) one for trachea swabs, and (4) one for lung-spleen swabs.

Characterization of Newcastle disease isolates.—Four 9- to 11-day-old embryos were inoculated with 0.2 ml of the pooled BHI broth from each vial. Embryos were candled twice daily and chorioallantoic fluid harvested as soon as embryos were found dead.

0472x484-18

0472x484-3

Task Force diagnosticians collected birds from flocks where VVND was suspected (top). Specimens were then taken to the Animal and Poultry Diagnostic Laboratory at San Gabriel for laboratory examination (bottom).

Following necropsy examination (left), embryos were inoculated with material from the suspect chickens (below). If embryos died within 48 hours, chickens were inoculated with the material and checked for lesions of VVND.

0472x485-8, 0472x486-8

The hemmaglutination (HA) and hemmaglutination-inhibition (HI) tests were conducted to determine the presence of Newcastle virus. Microtiter techniques and equipment were used extensively in HA and HI testings and were semiautomated by the use of mechanical diluters and stirrers.

Specimen processing was developed along assembly-line concepts. Each work unit was at a different station to reduce chances for cross-contamination between specimens. Two or more people were assigned to each work unit so they could readily detect errors or security violations by other members of the unit.

Special biological security procedures minimized chances of contamination between specimens and eliminated the possibility of VVND virus escaping the laboratory. Harvesting and transferring of chorio-allantoic fluid were conducted under laminar airflow hoods.

Laboratory personnel were required to change clothing before entering or leaving the laboratory. All inoculated birds were placed in biologically secure cages. All carcasses were disposed of by incineration or burial.

When the HA and HI tests on chorioallantoic fluid were positive for Newcastle virus, two 4- to 6-week-old chickens were inoculated with chorioallantoic fluid by swabbing the cloaca. These inoculated birds were then held in disposable biologically secure cages until death or 10 days post inoculation. If the Newcastle virus was the velogenic viscerotropic type, the inoculated bird would die and typical lesions would be observed. However, if the virus isolated was velogenic but nonviscerotropic, the bird would die but no visceral lesions would be found.

Diagnostic Summary

The statistics below give some indication of the enormity of the diagnostic laboratory support over the 27 1/2 months (mid-March 1972 through June 1974) the Task Force was in operation.

	Number
Accessions	48,366
Specimens	217,631
HI tests	228,507
HA tests	265,961
Chick inoculations	1,268
Embryo inoculations	435,386

Task Force Ready for Action

Facing the Task Force in mid-March was a known backlog of more than 140 infected or exposed flocks containing some 1.7 million poultry that had to be depopulated (destroyed). Quarantines had to be enforced on a 45,000-square-mile area and a massive vaccination program had to be implemented.

Under the authority of USDA's Veterinary Services Policy and Program Standards for the Eradication of Exotic Newcastle Disease, issued March 16, 1972, the Task Force was ready for action. Appendix B (*see* p. 64) presents the program standards which were the nucleus of the eradication program.

A census of the poultry and bird population indicated that when the Task Force's operation started there were approximately 41,000 flocks in the eight-county area that contained about 40 million birds. A breakdown of those figures showed 626 commercial laying flocks with nearly 35 million chickens, 106 broiler flocks with over 2 million birds, 82 turkey flocks with about 2 million birds, and an estimated 40,000 backyard flocks and aviaries with nearly 1 million birds.

The Task Force issued regular press releases to inform the public and backyard and commercial flock owners about the eradication program and its progress. Radio spot announcements concentrated on informing local residents about the activities of vaccination teams. In June 1972, Task Force information officers prepared a 16-page cartoon booklet that explained, in simple terms, the three-pronged fight against "the chicken disease in southern California." Vaccination teams and Task Force inspectors and veterinarians distributed them to poultry owners. This booklet was primarily designed for backyard flock owners who didn't have a large economic interest in either the disease or the eradication campaign.

0472x494-17

Task Force activities generated extensive media coverage, including newspapers as well as radio and television stations. Information officers with the Task Force issued news releases on a regular basis to keep the public and affected poultrymen informed about the eradication campaign.

THE THREE-PRONGED ATTACK

Stopping the explosive spread of exotic Newcastle disease (VVND) was the first priority of the newly formed Newcastle Task Force. This attack was waged on three fronts:

1–An intensive effort to find and depopulate (destroy) all infected and exposed flocks–thus eliminating continuing sources of the VVND virus.

2–Quarantines enforced to restrict movements of poultry, poultry products, and birds of all kinds (such as pet birds, show birds, and caged birds) and to contain the spread of VVND.

3–A massive vaccination program to increase resistance of birds and decrease production of virus in infected flocks.

Depopulation of Flocks–Eliminating the Virus

The first part of the three-pronged attack–the depopulation (destruction) of large numbers of birds in infected and exposed flocks–was perhaps the most important, as well as the most difficult. Facing Task Force officials on March 14, 1972, were over 1.7 million birds in known infected and exposed flocks distributed in five counties as follows:

County	*Number of birds*
San Bernardino	1,289,774
Ventura	178,141
Riverside	153,463
Los Angeles	71,020
Orange	32,357
Total	1,724,755

Eliminating VVND required the detection of virus in a flock, appraisal, and rapid, humane destruction of the infected and exposed flocks. It also meant the cleaning and disinfecting of all premises. Separate sections of the Task Force, working closely with one another, handled these tasks.

The basic purpose in all cases was to rapidly eliminate all sources of the exotic Newcastle disease virus because, as long as an infected flock remained alive, more VVND virus was being produced. The larger the quantity of virus produced and the longer it was present, the greater the chance of spreading VVND to other birds and other flocks. Therefore, speed and efficiency in killing and disposing of infected and exposed flocks (depopulation) was the key factor in eliminating the virus.

Table 1 (on page 23) shows the number of flocks and birds destroyed from March 13, 1972, to July 12, 1973. The last infection was found in a turkey flock on June 28, 1973, and the flock was destroyed a few days later.

Appraisal

No depopulation was allowed to proceed until the owners signed appraisal forms. All birds, products, and materials destroyed because they were infected, exposed to, or contaminated with VVND virus were appraised on conditions set forth in the Code of Federal Regulations Title 9, Part 53.3.

Appraisal teams usually consisted of one Federal and one State employee. To assure rapid appraisal, they arrived on infected premises soon after diagnosis of VVND.

Each team was furnished with lists of prices that could be paid for each class and age group of poultry. Some negotiations with owners were necessary to arrive at a fair market price. When available, hatchery receipts were used to establish exact ages of each poultry flock.

Feed, eggs, and papergoods were appraised at the amount paid by the owner as verified by sales slips. Other materials that could not be suitably cleaned and disinfected were appraised at actual replacement cost.

Commercial and backyard poultry flocks were appraised by agreement with the owners. Special appraisers were utilized when birds other than commercial poultry were declared infected. Value of exotic birds and pigeon flocks were not easily determined, but outside experts helped Task Force appraisers establish fair market values.

Indemnity

During the first 7 1/2 months of Task Force operations, nearly 12,500 exotic birds in 70 infected and exposed aviaries (18 commercial, 52 household) were destroyed at a cost of just under $109,000 in Federal indemnities. Perhaps the most celebrated–and expensive–exotic bird to meet his demise was a "roller skating" cockatoo appraised at $2,000.[5]

---

[5] A pet shop in Studio City, a Los Angeles suburb, received $13,532 in indemnities for 485 birds ordered killed, including $2,000 for a cockatoo that could roller skate. Task Force officials asked for a performance before the bird was destroyed. The appraiser had to be sure the bird was talented enough to be worth the sum paid.

Table 1.–Emergency operations: Number of flocks and birds destroyed in southern California, March 13, 1972, to July 12, 1973

Period	*Number of flocks*	*Number of birds*	*Cumulative number of flocks*	*Cumulative number of birds*
1972				
March 13 to 31	62	926,410	62	926,410
April	136	1,626,375	198	2,552,785
May	93	854,249	291	3,407,034
June	98	242,657	389	3,649,691
July	68	244,780	457	3,894,471
August	31	124,493	488	4,018,964
September	138	655,586	626	4,674,550
October	38	19,453	664	4,694,003
November	38	3,773,271	702	8,467,274
December	103	994,169	805	9,461,443
1973				
January	157	1,221,871	962	10,683,314
February	231	283,899	1,193	10,967,213
March	64	203,161	1,257	11,170,374
April	13	300,335	1,270	11,470,709
May	4	50,036	1,274	11,520,745
June	0	0	1,274	11,520,745
July 1 to 12	1	55,200	1,275	11,575,945

Indemnity paid to commercial layer flocks was limited to a maximum of $2.00 per bird. Appraisal for layers was made on a sliding scale which varied according to the age of the birds. Indemnities were based on an appraisal of actual value of birds for meat, egg production, or breeding. No dollar limits were placed on appraisals of breeding or parent stock, caged birds, or backyard flocks.

On October 5, 1972, indemnity regulations were changed to permit payment of supplemental indemnity to reimburse owners for profits they would have realized had their flocks not been depopulated. The change was made retroactive to the March 14 Declaration of Emergency.

Approximately 26 weeks were required for an owner to replace his flock. Economists devised a supplemental indemnity formula, whereby the weekly price of feed and other items were used to determine the cost of producing a dozen eggs. Actual prices paid for ranch eggs were established by averaging prices realized by producers each week. The difference between cost of production and egg prices was recorded each week. Normal experiences were used to formulate an estimate of how many eggs each age group would lay in a given week. Averaging the difference between cost of production and egg prices for 26 weeks determined if the owner would have experienced a profit or a loss if depopulation had not occurred. If a profit would have been made, supplemental indemnity was paid equal to the profits.

All Indemnity Paid

Appraisal	$22,374,000
Supplemental indemnity	5,638,741
Total payments to owners	$28,012,741[6]

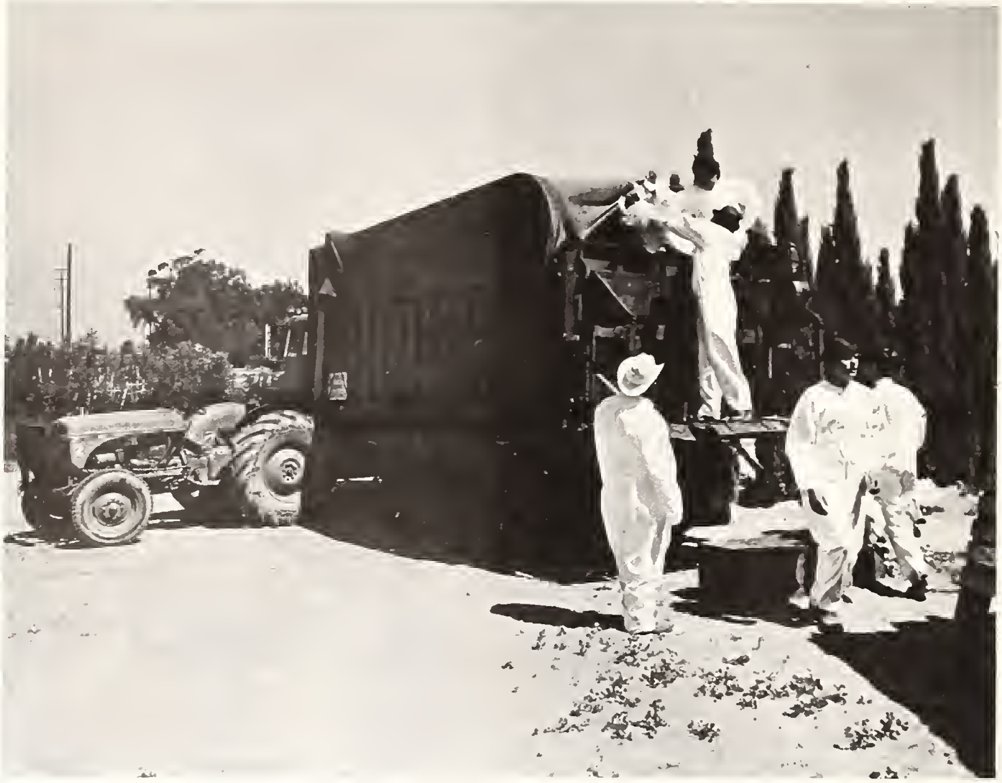
Methods of Depopulation

One of the major concerns of the Task Force was the need for rapid and humane euthanasia of large numbers of infected and exposed flocks of all types. Trials with various methods included introducing a drug into drinking water, methyl bromide gas, carbon monoxide gas, and carbon dioxide gas.

Drugged drinking water.–A drug, Tetraethylpyrophosphate (TEPP), placed in the water or feed caused instant and painless death when a chicken

---

[6] Includes indemnity paid from matching State-Federal funds before the Declaration of Emergency.



0472x473-23

0472x476-3

Carbon monoxide gas from internal combustion engines, piped into tarpaulin-covered rendering trucks, was the most common method of destruction used for large commercial laying operations (above). Crews of locally hired, temporary workers (left) carried the hens from the laying houses into the waiting trucks.

consumed the water or feed. However, TEPP had several disadvantages: (1) Preparing it for administration took several hours, (2) it was dangerous to personnel administering the drug, and (3) it was ineffective for birds too sick to eat or drink. By the end of March 1972, when use of TEPP was discontinued, some 300,000 birds had been destroyed with TEPP.

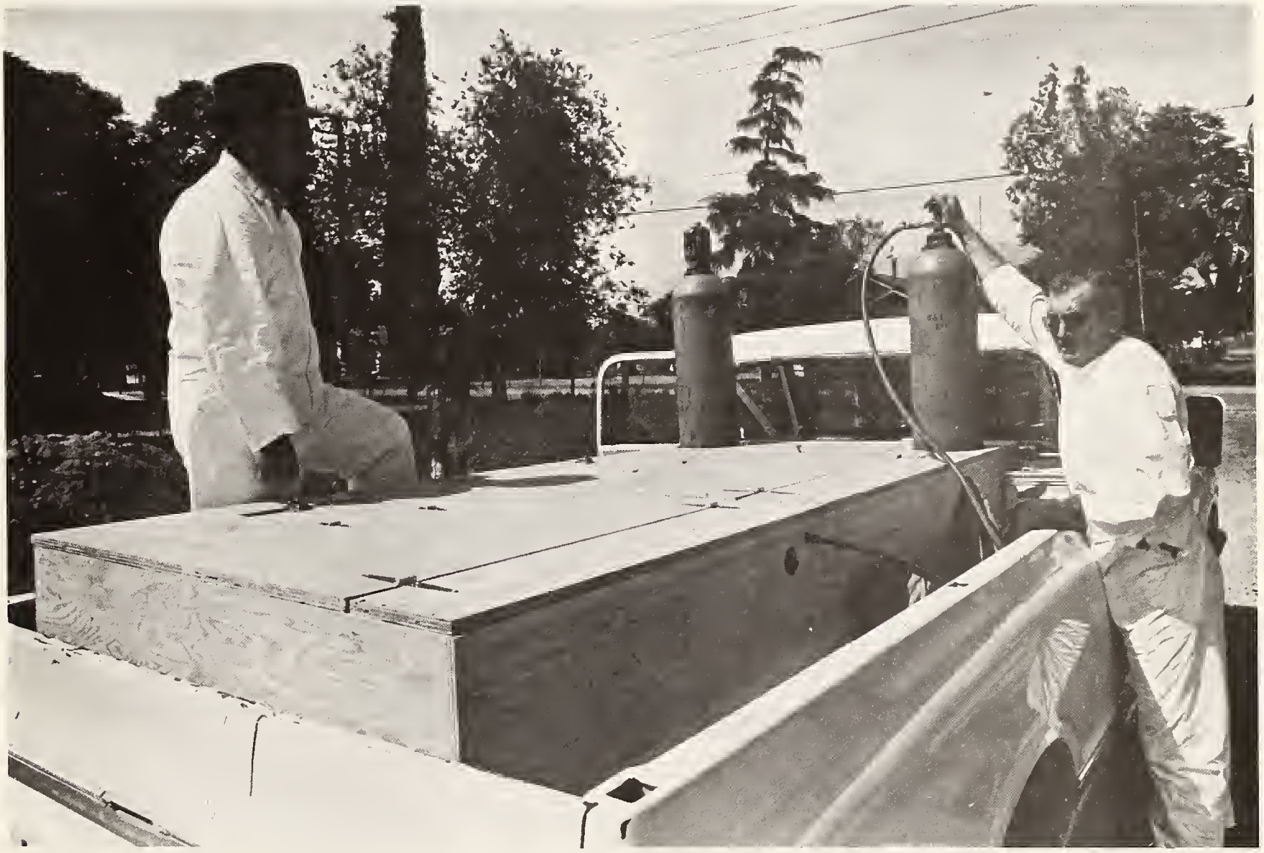
Methyl bromide gas.—Use of this gas was humane and rapid, but it was also dangerous to handle and more expensive than other methods. This gas was pumped into large poultry houses that were sealed with plastic drapes. One advantage of using methyl bromide gas was its virucidal action. However, this method proved too expensive and time consuming because draping the houses required up to 2 days. Workers often damaged the poultry houses while enclosing them. Mass removal of thousands of poultry carcasses after rigor mortis had set in also proved difficult.

Carbon monoxide (CO) gas.—The use of CO is humane and rapid. In use by early April 1972, this gas was most satisfactory to depopulate large flocks because of its low cost, its availability, and its greater safety. Most commercial flocks were destroyed by this method.

The live birds were put in large rendering trucks with the truck body covered tightly with tarpaulins. Exhaust from gas combustion engines, piped through water—to cool the gas—and then into the rendering truck on a continuous basis, quickly killed the birds. The loaded trucks were then sealed and driven directly to a rendering plant where the dead birds were unloaded and the trucks cleaned and disinfected. Carcasses of birds were ground and cooked at temperatures that would kill the VVND virus. The resulting product was used as fertilizer or as an animal or poultry feed supplement.

Task Force guards accompanied all trucks hauling poultry carcasses. These guards supervised transportation and unloading of carcasses, cleaning and disinfecting, and any emergencies, such as breakdowns enroute to the rendering plant.

Carbon dioxide (CO_2) gas.—Use of CO_2 is more expensive than CO but much easier to handle. To handle small, backyard flocks, workers built specially designed



0472x478-17

For destruction of backyard flocks and pet shops or small aviaries, Task Force workers equipped three pick-up trucks with airtight, plywood boxes. Carbon dioxide gas in canisters on the trucks was released into the boxes as the birds were loaded through trapdoors on the top.

plywood boxes and then mounted them on pickup trucks equipped with tanks of carbon dioxide and control valves. Carbon dioxide was released into the wooden boxes as the birds were loaded through doors on the top. Following euthanasia, the birds were buried on the premises or at other disposal points. These trucks were also used for pet shops and small aviaries. In some cases, pet birds also were destroyed by placing them in plastic bags and piping in carbon dioxide from small portable tanks.

Disposal of Carcasses

Disposal of carcasses at rendering plants required careful advance planning to avoid overloading rendering facilities. The two largest rendering plants in southern California could handle a combined total of 60,000 to 90,000 birds per day. Dead birds in excess of this capacity had to be hauled to disposal points where they could be buried.

To help cope with the amount of work, the Task Force engaged two commercial contractors who provided labor crews to load the birds into the trucks and to clean and disinfect all premises under Task Force supervision. Contractors were paid 10 cents for each bird destroyed and 16 cents a bird for cleaning and disinfecting contaminated premises.

0472x481-12

Following euthanasia, the birds were buried on the premises or at other disposal points.

0472x472-29

One problem with disposal of dead birds by burying was in finding a burial site. Some landowners objected because they feared it would damage the soil structure, thus devaluing the land for future development—and many infected poultry ranches were located in areas that were potentially extremely valuable for housing developments.

0472x460-21

0472x462-9

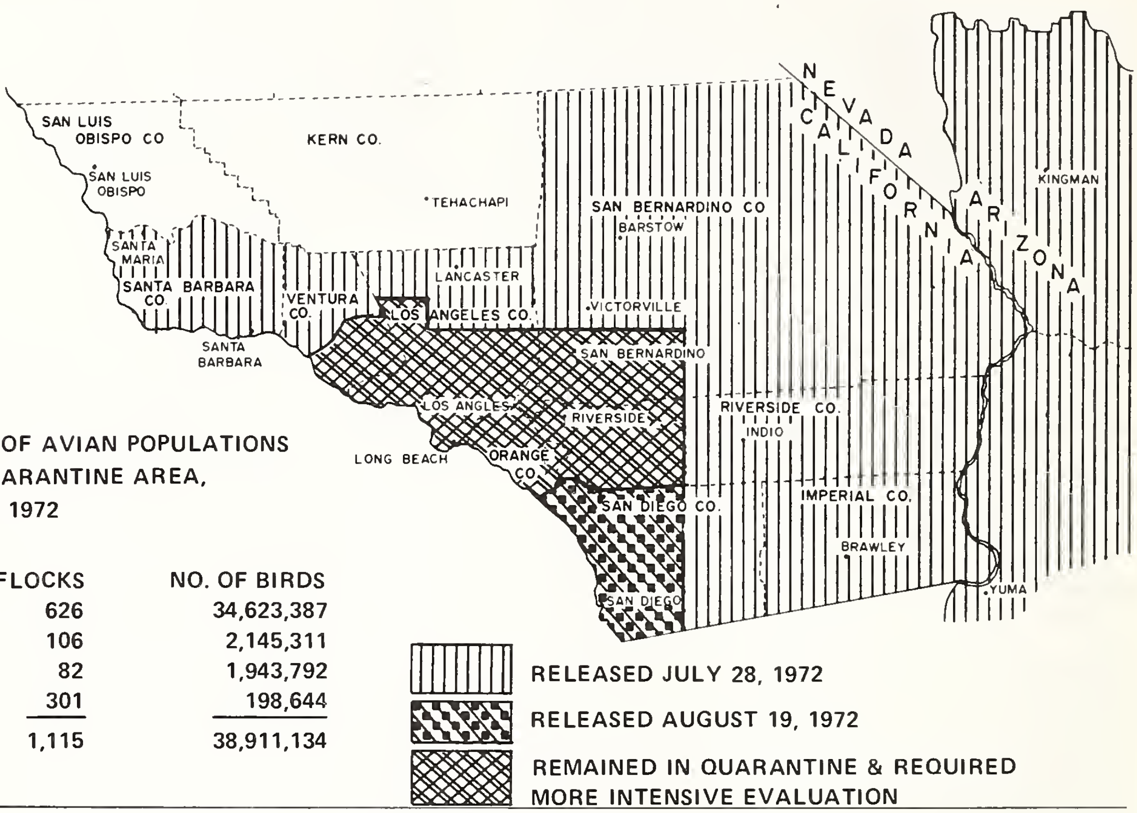
0472x461-25

Cleaning and disinfection of infected poultry ranches was a major part of the Task Force effort. Mountains of chicken manure had to be removed and buried. Feathers and other debris was burned off with miniature "flame throwers" (top left). Following cleaning, spray disinfectant was then applied (above, right). Finally, the premises were left vacant for at least 30 days before the owner could restock (below).

Quarantine–Containing the Disease

The second prong of the three-pronged attack to contain the spread of VVND involved placing the eight southernmost counties of California (Santa Barbara, Ventura, Los Angeles, San Bernardino, Orange, Riverside, San Diego, and Imperial) under quarantine. This action dramatically increased the area under quarantine–from less than 100 square miles to over 45,000 square miles of mountains, deserts, suburban, urban, and farmland areas, crisscrossed by an extensive network of superhighways and primary and secondary roads.

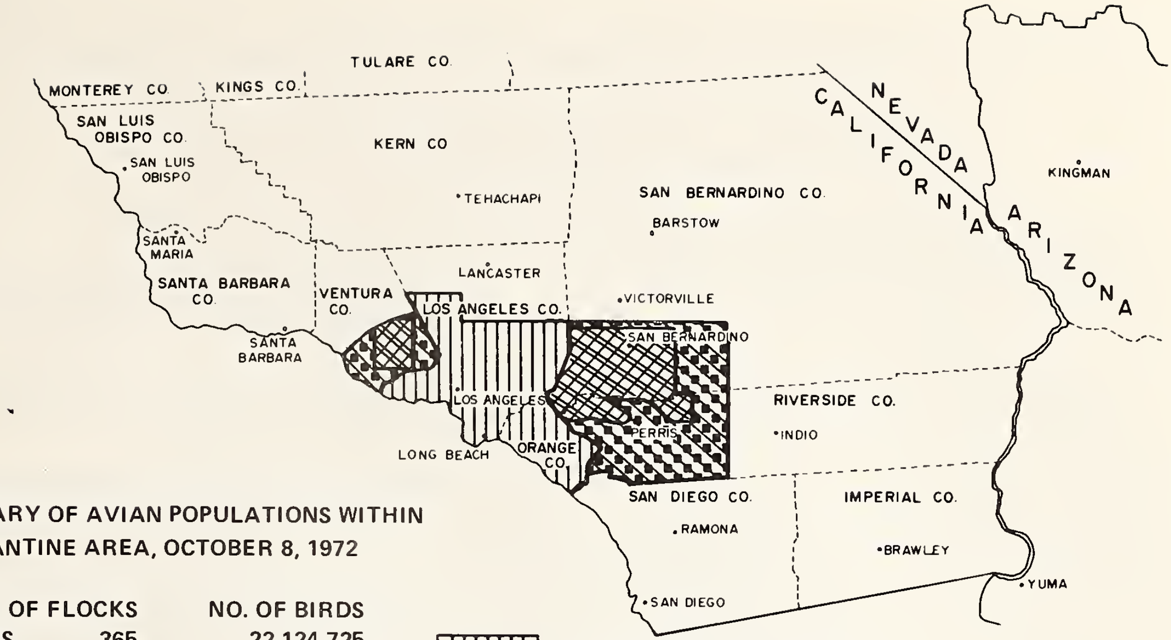
Figures 4 to 6 depict the southern California avian population within the VVND quarantine areas on March 14, 1972, October 8, 1972, and March 1, 1973, respectively. Quarantine action (placing and releasing) and the square miles under quarantine during various dates from 1971 to 1973, inclusively, are presented in table 2.



SUMMARY OF AVIAN POPULATIONS WITHIN QUARANTINE AREA, MARCH 14, 1972

	NO. OF FLOCKS	NO. OF BIRDS
LAYERS	626	34,623,387
FRYERS	106	2,145,311
TURKEYS	82	1,943,792
EXOTICS	301	198,644
	1,115	38,911,134

Figure 4.–Southern California VVND quarantine area on August 19, 1972.



SUMMARY OF AVIAN POPULATIONS WITHIN QUARANTINE AREA, OCTOBER 8, 1972

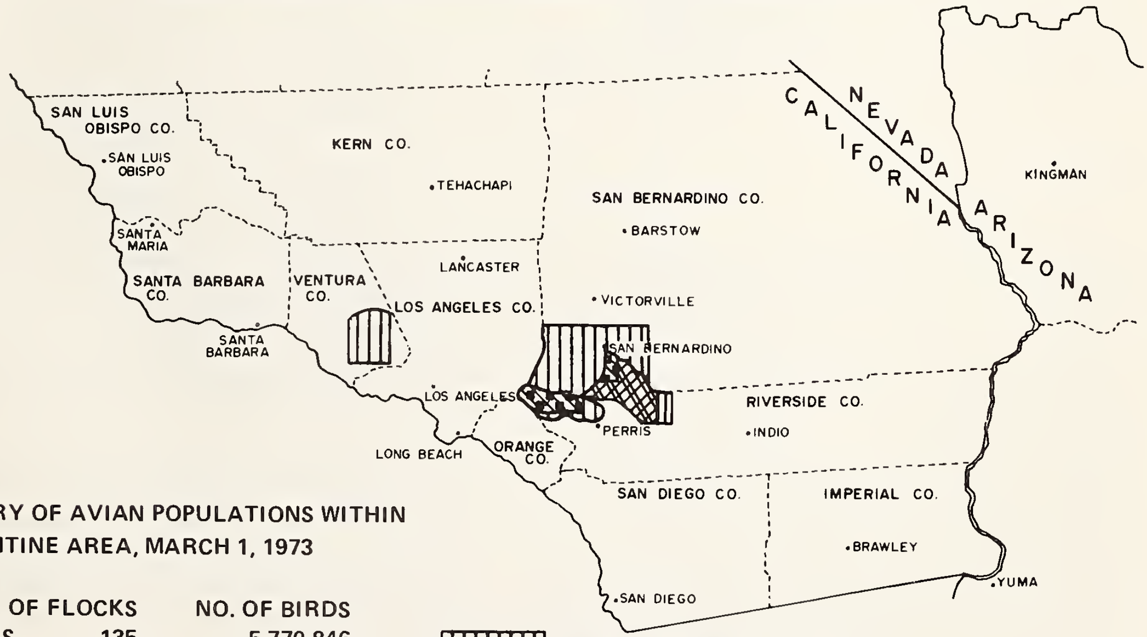
	NO. OF FLOCKS	NO. OF BIRDS
LAYERS	365	22,124,725
FRYERS	3	61,000
TURKEYS	35	568,672
EXOTICS	117	62,003
	520	22,816,400

▥ RELEASED OCTOBER 8, 1972

▨ RELEASED DECEMBER 22, 1972

▦ REMAINED IN QUARANTINE

Figure 5.—Southern California VVND quarantine area on December 22, 1972.



SUMMARY OF AVIAN POPULATIONS WITHIN QUARANTINE AREA, MARCH 1, 1973

	NO. OF FLOCKS	NO. OF BIRDS
LAYERS	135	5,770,846
FRYERS	–	–
TURKEYS	–	23,000
EXOTIC	120	60,000
	255	5,853,846

▥ RELEASED MARCH 1, 1973

▨ RELEASED JUNE 15, 1973

▦ REMAINED IN QUARANTINE

Figure 6.—Southern California VVND quarantine area on June 15, 1973.

All changes in the quarantine area were based on studies conducted by the Task Force epidemiologists. During the entire program, only one small area in Riverside County had to be requarantined.

Table 2.–Quarantine action, southern California outbreak, 1971-1973

Date	*Square miles (mi^2) under quarantine*	*Quarantine action*
Dec. 23, 1971	36	Placed on 36 mi^2 around Fontana in San Bernardino County; plus individual premises in Los Angeles County.
Jan. 28, 1972	66	Placed on 20 mi^2 in San Bernardino County and on 10 mi^2 in Riverside County.
Mar. 10, 1972	45,000	Placed on all eight southern California counties–Santa Barbara, Ventura, Los Angeles, San Bernardino, Orange, Riverside, San Diego, and Imperial.
Apr. 14, 1972	46,000	Placed on Yuma County, Ariz., and on that part of Mohave County, Ariz., south of the Colorado River except for the Hualapai Indian Reservation.
May 15, 1972	- - -	Placed on individual farms in Tulare and Fresno Counties near Dinuba and Reedly, respectively.
May 31, 1972	- - -	Placed on a 320-acre farm in Kings County near Lemoore.
July 12, 1972	- - -	Placed on two farms in Kings and Kern Counties near Hanford and Tehachapi, respectively.
July 28, 1972	8,000	Lifted from all of Imperial County; from all but two individual premises in Santa Barbara County; from northern sections of Ventura and Los Angeles Counties; from eastern sections of San Bernardino, Riverside, and San Diego Counties; from most of Yuma and Mohave Counties in Arizona. (California areas remaining under quarantine included all of Orange County, plus those portions of Ventura, Los Angeles, San Bernardino, Riverside, and San Diego Counties that lie south and west of the Santa Clara River and the crests of the San Gabriel, San Bernardino, San Jacinto, and Laguna Mountains, commonly known as the Coast Range, amounting to about 2,000 mi^2).
Aug. 18, 1972	- - -	Lifted from the remainder of San Diego County–except for five individual premises–and from the remainder of Yuma County, Ariz.
Aug. 31, 1972	- - -	Lifted from a 160-acre farm near Dinuba in Tulare County and from the remainder of Mohave County, Ariz.
Oct. 5, 1972	4,200	Lifted from all of Orange County and the remainder of Los Angeles County–except for eight individual premises. (Western Riverside, southwestern San Bernardino, and southern Ventura Counties remained under quarantine.)
Oct. 27, 1972	2,300	Lifted from 1,900 mi^2 in Ventura, San Bernardino, and Riverside Counties.

Table 2.–Quarantine action, southern California outbreak, 1971-73–Continued

Date	*Square miles (mi^2) under quarantine*	*Quarantine action*
Nov. 29, 1972	- - -	Lifted from 13 individual premises in Orange, Los Angeles, and San Diego Counties–including the San Diego Zoo.
Dec. 8, 1972	1,700	Lifted from 600 mi^2 in Ventura and Riverside Counties.
Dec. 19, 1972	1,815	Placed (re-quarantined) on 115 mi^2 of Riverside County.
Dec. 22, 1972	1,450	Lifted from 384 mi^2 in Riverside County.
Feb. 8, 1973	690	Lifted from nearly 800 mi^2 in San Bernardino and Riverside Counties. Placed on 31 mi^2 in Riverside County.
Mar. 1, 1973	530	Lifted from the remainder of Ventura County.
May 25, 1973	400	Lifted from 130 mi^2 of San Bernardino County.
June 15, 1973	200	Lifted from 200 mi^2 of Riverside County.
Aug. 6, 1973	125	Lifted from 75 mi^2 in Riverside County.
Aug. 30, 1973	- - -	Lifted from the remaining 125 mi^2 in San Bernardino County. (No area in southern California under quarantine for exotic Newcastle disease.)

Quarantine Enforcement

Quarantine stations were established after each change in quarantine boundaries with minimum delay to effectively control the movement of poultry and poultry products from the quarantine area. Law enforcement officials were contacted to determine the most suitable sites for road check stations.

Enforcement investigators were responsible for conducting investigations and preparing case reports on alleged violations of international, interstate, and intrastate Newcastle regulations. When requested by the area offices, quarantine enforcement officials served violation notices, such as refusal to vaccinate, refusal to depopulate, hold orders, and other related enforcement activities.

The enforcement investigators determined the need for road encroachment permits and obtained permits, when required, through contact with the highway superintendent in the area in which road check stations were to be set up.

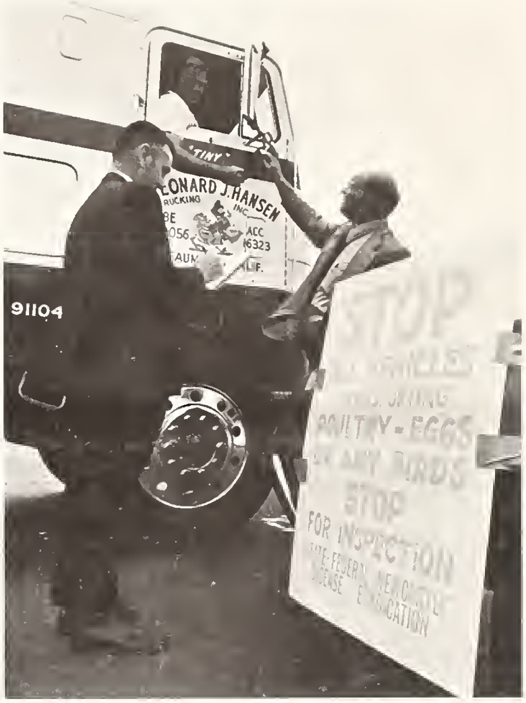
Permits

To regulate movement of birds within the quarantine area, the Task Force established a permit system under authority of the California Department of Food and Agriculture–Section 800, Title 3, of the State of California Administrative Code (*see* p. 69, Appendix B).

During the first few hectic days of Task Force operations, oral permits were granted to meet immediate and pressing demands. Later, when industry could give the Task Force advance notice of proposed movement of restricted items and products, written permits were issued. At first, written permits were good until revoked. However, because of apparent quarantine violations, after May 15, 1972, written permits were issued as valid for 2-week periods with renewal subject to Task Force approval.

Special permits allowed poultrymen having two or more premises to move their poultry between these premises. Until June 13, 1972, permits were issued for movement of poultry either for further production or

0472x457-29



0472x456-16

0472x456-20

0472x458-7

Quarantine checkpoints along major highways were used to regulate movement of poultry and eggs. On balance, the quarantine operation of the Task Force has to be judged a success. In only a few instances did the disease escape the quarantined area and in each case the isolated outbreaks were quickly eliminated.

for slaughter. After the discovery that poultry moved to other flocks for further production was responsible for spreading infection, movements between premises were prohibited. Thereafter, permits were issued only for poultry moving to slaughter.

Trucks hauling eggs were stopped at checkpoints to see if they had the required permit and to inspect the eggs for cleanliness. From the onset, egg shippers had been advised that a permit would be required for moving eggs out of the quarantine area. The permit allowed only washed and sanitized table eggs transported in new cases, liners, or boxes.

All fertilizer haulers within the quarantine area were contacted and informed that manure from noninfected flocks could be moved under permit only within the quarantine area. Manure from infected or exposed flocks had to be composted or buried.

As the area under quarantine grew smaller, the need for permits also diminished. By the end of December 1972, the original 45,000-square-mile quarantine area had been reduced in size to just under 1,500 square miles. This eliminated the demand for permits by a large segment of the poultry industry. The kind and number of permits issued by the Task Force in its first 10 months of the 1972 movement operation were:

	March 13 to July 18	*July 19 to December 29*	*Total*
For interstate movement:			
By Task Force headquarters	2,412	1,787	4,199
For movement to northern California:			
By Task Force headquarters	1,632	2,711	4,343
By area offices	–	329	329
	1,632	3,040	4,672
For movement within the quarantine area:			
By Task Force headquarters	–	331	331
By area offices	4,079	1,369	5,448
	4,079	1,700	5,779
Total for all movements:	8,123	6,527	14,650

Quarantine Movement Restrictions

Task Force studies showed that man, directly or indirectly, was responsible for 35 percent of the disease spread. The movement of birds—everything from baby chicks to spent hens[7] for every purpose from trades and sales to auctions—was the most likely means of spreading exotic Newcastle, with 25 percent of the flocks infected or exposed by direct contact with poultry from other flocks. Man also managed to spread the disease by picking up the virus on his shoes and clothing and moving VVND virus from one poultry ranch to another. Movement of people and equipment accounted for 8 percent of the spread. Movement of egg flats was another important factor in the spread of the disease. In about 15 percent of the cases, the source could not be accounted for. A fairly large percentage could have been infected by several routes.

Eradication of VVND would have been simplified if all movement of poultry, poultry products, and equipment could have been stopped. This was not feasible in an area where more than 600 egg-producing flocks depended on daily sales of table eggs to pay for operating expenses. Other poultry operations had to move young birds for replacement and old birds to slaughter. Stopping movement of eggs and poultry to market also would have had a severe impact on consumers.

Therefore, methods for moving poultry and eggs within the quarantine area were developed. Movement regulations had to be strict enough to minimize the chance that VVND would spread locally, to northern California, or to other parts of the Nation.

Movement restrictions of birds were placed under provisions of California law and USDA's Emergency Program 725.1 (*see* p. 64, Appendix B).

Quarantine Violations

Following early scattered reports of quarantine violations, an investigator was stationed at the Arizona State Department of Agriculture border station at Yuma, Ariz. He reported a heavy flow of "backyard" poultry, pet birds, eggs, and manure moving in violation of quarantine rules.

---

[7] Spent hens that had completed their first lay cycle were commonly sold to another rancher to be force molted, to initiate a second lay cycle.

At the end of March, the Task Force established a quarantine enforcement section to deal with these violations. Plans were made to set up checkpoints at all airports in the quarantine area, at Mexican border points of entry, and at exit points to Arizona, Nevada, and nonquarantined counties in California.

The first quarantine checkpoint was established on April 12, 1972, at Barstow in San Bernardino County. Thirteen additional stations, including one at Yuma, Ariz., were set up in April and May. Task Force personnel received valuable cooperation in this effort from a number of different agencies, including the California and Arizona State Highway Patrols, local law enforcement agencies, and the highway departments of California and Arizona.

Quarantine enforcement activities were tightened in late April. As of April 27, a total of 47 apparent violations had occurred—21 of them in the preceding week. At that time, 9 checkpoints in 4 districts were being manned by 40 Task Force quarantine enforcement officers. In addition, the California Highway Patrol aided in intercepting violators who attempted to evade or ignore the roadside checkpoints.

One such incident occurred on May 13, 1972, when a Las Vegas, Nev., resident transporting poultry from El Monte in Los Angeles County to Las Vegas was stopped at a quarantine checkpoint at Yermo, Calif. Rather then return the 27 poultry to their point of origin in Los Angeles County, he chose to sign a statement acknowledging that he would be in apparent violation of Federal law by proceeding. On his arrival in Nevada, authorities in Las Vegas placed the shipment under a Nevada State quarantine. Later they seized and destroyed the 27 poultry and 100 other poultry on the Las Vegas premises. The owner received no compensation.

0472x493-16

A special section was set up within the Task Force to deal with exotic birds. Members of this section met with diverse groups of bird owners, bird fanciers, aviary owners, importers, and dealers to inform them about exotic Newcastle disease and the eradication campaign.

Special Problems Within Quarantine Areas

Although there were no Task Force movement restrictions on exotic or pet birds within the quarantine area, the cooperation of this industry was important to the eradication effort. At first, the exotic bird industry was largely uninformed regarding quarantine regulations. Because of this, Task Force officials held many meetings with diverse groups of bird owners, bird fanciers, aviary owners, importers, and dealers to inform them about the disease and the emergency measures. These contacts were largely responsible for a rapid dissipation of opposition to the Task Force program by the pet bird industry in southern California.

After gaining the confidence of exotic bird industry groups, the Task Force set out to make a comprehensive evaluation of the pet bird situation within the quarantine zone. Wholesalers were asked to voluntarily refrain from selling for 30 days or until completion of the evaluation. This initial effort led to a surveillance system involving weekly checks of a dozen dealers handling the majority of birds in commerce in the quarantine area. Some 150 additional pet bird outlets were given less regular checks.

The surveillance system involved inspection of aviaries, examination of records, submission of sick and dead birds to laboratories, serological studies, and placement of sentinel birds (*see* Sentinel Birds, p. 42). Surveillance also included Task Force inspection of all overseas shipments of birds arriving at the Los Angeles International Airport.

Airport surveillance led to the diagnosis of VVND in seven shipments of imported birds. In addition, Task Force personnel working with exotic birds were responsible for exposing several smuggling incidents, one of which resulted in the seizure of 4,100 birds illegally transported to northern California.

Imported birds.—In March 1972, when the expanded quarantine was imposed, USDA adopted import regulations for psittacines (parrots, parakeets, and related birds) and greater and lesser hill mynahs. Birds of these species had been implicated in introductions of VVND. The action finalized a January 17, 1972, proposal to regulate importation of psittacines and mynah birds. Under the new regulations, these birds were to be held in USDA-approved, privately owned, overseas quarantine facilities for 45 days.

On July 2, routine laboratory tests on imported exotic birds found dead on arrival at the Los Angeles International Airport revealed VVND virus. The dead birds—of species not covered by import regulations—were part of a shipment from Bankok, Thailand. Live birds from this shipment had been sent to three zoos outside of southern California (in San Francisco, Calif., St. Louis, Mo., and Birmingham, Ala.) and to four locations within the quarantine area (the San Diego Zoo, Lion Country Safari in Orange County, Busch Gardens in Los Angeles County, and a pet store in Studio City).

On August 24, 1972, the U.S. Department of Agriculture banned further commercial imports of all species of live pet and exotic birds. The ban was an extension of regulations imposed at the beginning of Task Force efforts in March 1972, when imports of psittacines and greater and lesser hill mynahs were severely restricted. The ban, imposed following the isolation of the VVND virus from 14 different species of nonregulated birds during 12 separate investigations, exempted one or two personally owned pet birds brought in by individual travelers.

Pet birds.—One of the most difficult jobs facing the Task Force was that of enforcing movement regulations in an area such as southern California with its extensive network of superhighways and primary roads. To make sure trucks carrying poultry and eggs had the proper permits and to prevent poultry and pet birds from moving out of the quarantine area, checkpoints were strategically located on major highways. Roadblocks

0572x783-8

On August 24, 1972, USDA banned further imports of pet and exotic birds, except for one or two personally owned pet birds brought in by individual travelers under special restrictions. The ban was lifted in October 1973 when a system was adopted allowing commercial importation of exotic birds through privately owned quarantine stations.

were clearly impractical on the maze of superhighways with traffic moving 60 miles per hour. However, a large sign alongside each highway advising all vehicles carrying poultry, eggs or pet birds to stop for inspection worked well.

Obviously, a quarantine inspector could not tell if a station wagon was carrying the family "budgie" out of the quarantine zone unless the operator stopped in response to the signs. Those that did were told that their pet bird could not leave the quarantine zone. The owner then had two options: (1) To return the bird to its point of origin, which might be several hundred miles away, or (2) to turn the bird over to Task Force inspectors for destruction. Birds were usually put in a plastic bag and the open end put over a car's exhaust pipe. Death was quick and painless, but hardly aesthetic.

In the fall of 1972, several critical stories appeared in the press on the operations of these quarantine checkpoints. Partly because of this adverse publicity, pet birds were no longer destroyed on the roadside in the presence of their owner. Rather, they were destroyed elsewhere at a later date. By early March 1973, the quarantine area had been reduced to such a small size that the checkpoints were no longer necessary. Instead, Task Force inspectors worked directly with the poultry industry on enforcement of quarantine regulations by checking potential sources of birds and eggs.

Game birds.—With the many different types of industries, birds, and people caught up in the quarantine action, a number of unique problems arose. One particularly thorny problem concerned pheasant growers in southern California who had contracts with various hunt clubs to provide game birds for shooting by members during the hunting season. Quarantine regulations prohibited the release of such birds, since pheasants and other game birds are highly susceptible to VVND and not all those released for hunting would be killed.

When the quarantine was imposed in March 1972, the hunting season was closed and the movement restrictions posed no problem for pheasant raisers. However, as the eradication effort continued and the fall hunting season approached, normal marketing practices for pheasant raisers and hunt clubs were threatened. The hunt clubs claimed they would lose up to $100,000 apiece if they were unable to operate; and raisers of pheasants and other game birds to be released saw their birds continuing to eat—with no market in sight. If a bird were sold directly to slaughter for meat, it would be worth far less than an estimated $10 to $20 when marketed through a hunt club.

In mid-August 1972, one of the most vocal pheasant raisers called for a Congressional investigation. On August 29, 2 days before the September 1 start of the hunting season, a group of club operators persuaded a Riverside Superior Court Judge to issue a temporary restraining order forbidding the California Department of Food and Agriculture from interfering with the scheduled opening of pheasant hunting at private clubs. However, on August 31, another Superior Court Judge set aside the temporary restraining order and moved the hearing date ahead from September 18 to September 1. At that hearing, quarantine rules of the Task Force were upheld. Later, as large areas were released from quarantine, the problem was resolved.

Hatcheries.—Because hatcheries and hatching eggs were another area of major concern, a special section was set up within the Task Force to deal with these problems. In the quarantine area, 13 large commercial hatcheries and a large number of small game bird hatcheries were involved in a variety of operations, each involving its own special problems. Some maintained breeding flocks in the quarantine area, while others shipped in eggs or day-old chicks from outside the quarantine.

As a result of outbreaks traced to hatcheries (*see* Hatchery Outbreak, p. 51), on May 2, the Task Force placed new shipping restrictions on hatcheries. Under these new regulations, hatchery stock within the quarantine area was no longer permitted to be sold through feed stores, pet stores, or any other place where there was a high likelihood that the chicks would be resold. From hatcheries, chicks were allowed to go only to premises that agreed to keep the chicks for at least 30 days and not resell them. In addition, no over-the-counter sales from hatcheries were permitted.

Quarantine a Success

On balance, the Task Force's quarantine operation has to be judged a success. In only a few instances did the disease escape the quarantined area. In each instance, the isolated outbreaks were quickly located and eliminated. Movement regulations were adjusted and changed to prevent similar future spread of the disease. The success of the quarantine program was largely due to the cooperation of the owners of poultry flocks, pet birds, and game birds. They made the program work.

Vaccination—A Two-Edged Sword

On the third of its three-pronged attack, the Task Force launched a massive vaccination program to improve the resistance of the birds and decrease production of velogenic viscerotropic Newcastle virus in infected flocks.

One of the more irate pheasant raisers vented his frustrations at the quarantine regulations on October 2, 1972, when he brought a cage containing four pheasants into Task Force headquarters and released them in the office of the director, Dr. E. C. Sharman (right foreground).

Experimental and field findings during the campaign indicated exotic Newcastle virus persisted indefinitely in vaccinated flocks. Thus, vaccination was a two-edged sword: (1) It markedly reduced mortality in VVND-infected flocks, but (2) it also tended to mask VVND infection and make detection and diagnosis difficult.

In the massive vaccination program, it also appeared that increased activity and traffic of vaccinators among the poultry ranches contributed to VVND's rapid spread. Backyard vaccination was discontinued in August 1972. Figure 7 shows the sharp decrease in disease incidence in backyard flocks following the end of the backyard vaccination program. This disease pattern continued during the cool, wet months of December 1972 and January 1973, when there was a dramatic increase in disease incidence in commercial flocks.

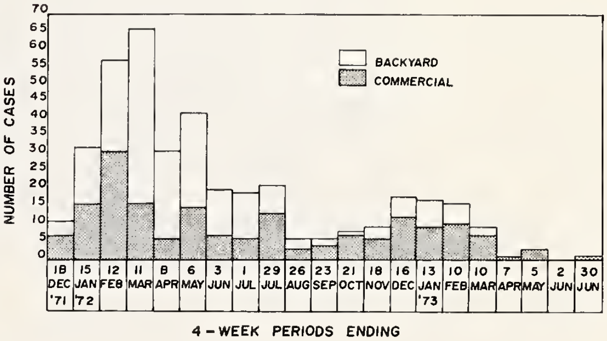


Figure 7.—Positive cases of VVND in avian species in southern California, based on date first sick.

The Vaccination Program

Vaccination was a major part of the eradication program adopted by USDA and the State of California under the theory that vaccination would produce an immune poultry population resistant to VVND infection. Some scientists initially believed VVND could be eradicated essentially by vaccination.

To get all the poultry in the quarantine zone vaccinated the Task Force divided the zone into six areas—each with an office—obtained supplies, and organized teams.

In the campaign four vaccines were used. These were B[1] strain, La Sota, Roakin, and Tissue Culture.

The Task Force reviewed each vaccine as to its safety and efficacy in various age groups of birds, and a vaccination protocol was issued (*see* p. 64, Appendix B).

The least pathogenic vaccine was given at 1 to 10 days of age. Birds were revaccinated at 4 to 8 weeks, again at 12 to 16 weeks of age, and, subsequently, every 60 days. Birds in the high risk areas were vaccinated and revaccinated at younger ages and shorter intervals than those in lower risk areas.

Poultry owners were allowed to choose any USDA-approved vaccine they desired. Vaccines were administered in accordance with manufacturers' directions. Special consideration was given to Kimber Newcastle vaccine, a product licensed by the State of California, but not by USDA. If the poultry owner chose to use Kimber vaccine, the Task Force recognized it as an official vaccination, but did not pay for the vaccine and its administration.

Simultaneous vaccination against other diseases was not approved for any species. Bronchitis and laryngotracheitis vaccinations were not administered within 10 days before or after Newcastle vaccination.

Administration of vaccine in drinking water often failed to stimulate desired antibody production; therefore, an eye drop, wing web, intranasal, or intramuscular administration was recommended. Later, the Task Force concluded that aerosol or spray administration stimulated the best antigen reponse and was least expensive to administer. Vaccination plans were developed for various types and ages of chickens and turkeys, but much professional judgment was required for each flock before the most appropriate vaccine and route of administration could be selected. Factors such as other diseases present in the flock, weather conditions, type of housing, and husbandry had to be taken into account.

The vaccination program consisted of two parts—the vaccination of backyard flocks and of commercial flocks.

Vaccination of Backyard Flocks

Field crews assigned to backyard flocks within the quarantine area were required to vaccinate all turkeys and chickens, including ornamental and game chickens. When requested by the owner, the field crews were to also vaccinate doves, ducks, geese, grouse, guinea fowl, partridges, pigeons, peafowl, pheasants, quail, and swans. Where other types of birds, such as parrots, parakeets, canaries, and finches, were found on the premises, instructions were given to the owner and La Sota vaccine issued for his use. Vaccination of backyard flocks was by individual application of La Sota vaccine given intraocularly or intranasally in accordance with the manufacturer's directions.

Armed with capture nets, the crews moved steadily from house to house all over southern California looking for chickens, ducks, geese, banty hens, pheasants, turkeys—everything from pigeons to peacocks. They went from neighborhood to neighborhood—through Van Nuys and Beverly Hills, Watts and Inglewood, and Glendale and Burbank; into Pasadena, Ontario, Norco, Loma Linda, and San Bernardino; through Riverside, Redlands, San Jacinto, and Hemet; down to Escondido, San Diego, and Imperial Beach; and over to El Centro, Calexico, and Blythe.

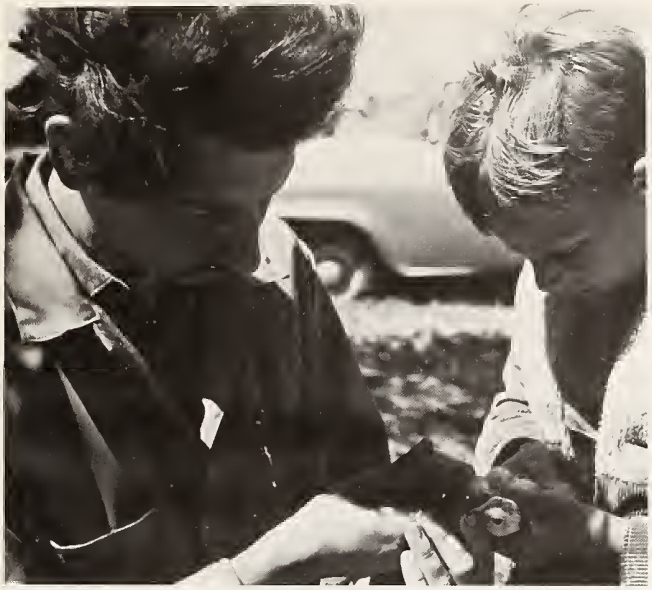
The vaccination of backyard flocks during the first round (April 1 to May 31, 1972) required a force of over 700 persons operating more than 400 vehicles. During this period 989,000 birds in backyard flocks were vaccinated in the eight-county area (*see* p. 70, Appendix C).

Total Task Force manpower had risen to 866 at the height of the first round of vaccination. During this first round, the entire eight-county area was still within the quarantine area and all ranches and backyard flocks were contacted at least once. During this period, epidemiologists received reports from the entire quarantine area. Evaluation of the data indicated that no disease existed in Santa Barbara and Imperial Counties. Based on these findings, a decision was made that the backyard flocks in these two counties would be vaccinated only once.

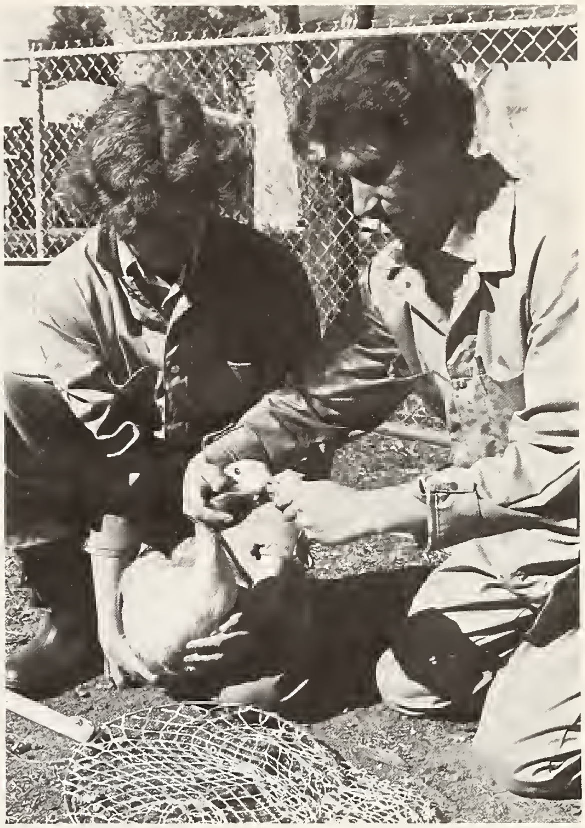
During the second round (June 1 to July 31, 1972), the Task Force reached a peak of nearly 1,300 personnel. During this round, approximately 743,000 birds were vaccinated in backyard flocks.

Finding the last few flocks in urban areas required 200 persons to work an additional 3 weeks. The backyard vaccination program began April 1 and ended in August 1972.

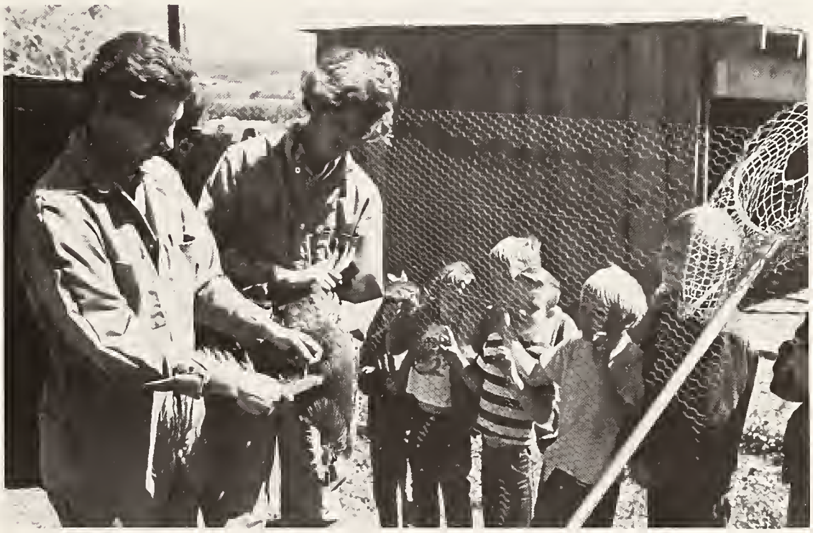
In reviewing the cost of recruiting and maintaining a large force for vaccination, it was evident that most of the effort and manpower of the Task Force was being



0472x466-3



0472x469-4



0472x466-9

Vaccination of backyard flocks in the eight-county quarantine area required a force of over 700 persons operating more than 400 vehicles. Vaccine was administered intraocularly (top, left), intranasally (top, right), or by wing web (bottom). The backyard vaccination program ended in August, primarily because of its high cost in relation to its effectiveness. Also, there is some indication that the vaccinating teams—because of lack of knowledge of disease prevention measures—were spreading exotic Newcastle disease.

utilized to vaccinate a very small number of birds that might have been better left unvaccinated to serve as natural sentinels. The backyard vaccination program was also expensive, costing in some counties as much as $3.96 to vaccinate each backyard bird.

Vaccination of Commercial Flocks

Some commercial poultry ranches had been using vaccines routinely for protection against the less virulent but related strains of domestic Newcastle disease virus. Supplies of these vaccines were available for use in the VVND outbreak.

In high-risk areas, vaccines were applied as soon as possible. Vaccination was repeated after as short an interval as could be recommended. A more conservative approach was followed in low-risk areas to minimize post-vaccination reactions such as mortality, paralysis, respiratory distress, and drop in egg production.

On March 15, 1972, an effort was undertaken in the quarantine area to recruit trained commercial vaccination crews and coordinate their vaccination schedules with Government crews. Two weeks later, 24 trained commercial crews coordinated vaccination schedules with Government crews in maintaining regular vaccination on an estimated 6.3 million birds. USDA paid commercial vaccinators 1 cent for each bird individually vaccinated, provided the vaccine was USDA licensed and administered under Government supervision, supported by a certificate on completion. For individual vaccination of turkeys on range, payment was 2 cents per bird because of the extra labor involved. Later 0.1 cent was paid to commercial vaccinators for mass vaccination by spraying or application in drinking water.

Vaccination of commercial flocks began in late March, but did not reach its peak until mid-April. Within the eight-county area, available data indicated there were 35 million layer chickens on 626 ranches; 2 million broilers on 106 ranches; and approximately 2 million turkeys on 82 ranches. However, total vaccination of commercial birds in round one numbered 43 million birds. Round one corresponded to the same period as that of backyard flocks (April 1 through May 31, 1972). By the time round two of commercial flocks had been completed (July 31), considerable areas had been released from quarantine and a large number of flocks had been depopulated because of VVND infection or exposure.

By mid-April 1972, 11 million birds had been vaccinated under Task Force auspices; and, by early May, 42 million birds had been vaccinated. Commercial flocks were revaccinated each 60 days. The Task Force discontinued payment for vaccine and administration in April 1973. By that time, 112,851,000 doses of vaccine had been administered (*see* p. 70, Appendix C). When vaccination of commercial flocks was discontinued, the small area remaining under quarantine contained only 4 million birds.

Vaccination Evaluation

Evaluation of Newcastle vaccines was a complicated procedure because of the large variation in vaccine strains, routes of administration, intervals between vaccinations, and parental immunity.

When the first introductions of VVND into the United States in 1970 and 1971 were reported, avian disease veterinarians began considering the role of vaccines. Vaccination had been successful in protecting birds against the endemic lentogenic and mesogenic strains of the Newcastle disease virus. Some use of vaccines against VVND had been reported from other countries. However, by March 1972, available information was unclear as to whether vaccine would eradicate the disease or only control it.

Elaborate sampling methods were adopted by the Task Force to measure pre- and post-vaccination HI titers to determine changes in immunity of birds. Various vaccines and methods of application were studied. Young chickens were found to be the weak point in the vaccination program. These birds were the most difficult to immunize in the face of exposure to VVND virus.

Parental immunity interference.—Parental immunity contributed to the problem of immune response from early vaccinations. Chicks from different sources varied in their passive anitbody levels. If the antibody levels in the chicks were high, as indicated by the HI titer, then early vaccination was of little value.

Beginning in June 1972, breeder flocks in the area were monitored to measure antibody levels. Blood samples were taken from cockerel chicks—which would otherwise be destroyed—to determine HI antibody levels. If the HI titers were low, the chicks were vaccinated at 1 to 10 days of age. If the titers were high, the chicks were vaccinated at 14 to 18 days of age. Regardless of the method used, young chicks were never successfully immunized. Even with repeated vaccinations from time of hatching, it was not possible to produce adult chickens refractive to infection by VVND virus.

Vaccination breaks.—Following are some examples of vaccination breaks in young chickens:

- B^1 strain applied intraocularly at 7 days of age; clinical symptoms 27 days afterward; VVND virus isolated.
- B^1 strain applied at 10 days of age; symptoms 11 days later; VVND virus isolated.

0472x486-24

The vaccine evaluation section of the Task Force was responsible for monitoring commercial laying flocks to check the effectiveness of mass vaccination techniques. Blood samples were drawn from randomly selected birds to measure antibody levels.

- Tissue culture vaccine applied intramuscularly at 6 weeks of age to chickens that had received La Sota intraocularly at 10 days; symptoms 7 days after application of tissue culture; VVND isolated.
- La Sota applied intraocularly at 6 weeks of age; symptoms 7 days after vaccination.
- Tissue culture applied intramuscularly at 6 weeks of age; symptoms 4 days after vaccination; VVND virus isolated.
- La Sota applied intraocularly at 5 days; symptoms 29 days later; VVND virus isolated.

After August 1972, all flocks had undergone repeated vaccinations against Newcastle disease. Despite this massive vaccination and revaccination, VVND continued to spread. The extensive outbreaks during November 1972 through January 1973 in the Cherry Valley and Yucaipa areas occurred in flocks that had received as many as four official vaccinations with USDA-approved and California-licensed vaccines. Epidemiologists who later studied the outbreak found that a greater percentage of these flocks became infected than did those in the original 1971 Fontana outbreak, where vaccination of adult birds was virtually nonexistent.

By January 1973, evaluation of the vaccination program showed that vaccination had failed to stop the spread of the disease, regardless of the vaccine used, the method of application, or the frequency of use. Vaccination crews were only spreading the disease, not preventing it, and the vaccine was complicating diagnosis and delaying eradication efforts.

Vaccination Summary

Vaccines were a much used—and often abused—weapon in the effort to control and eradicate VVND from southern California. Task Force officials concluded that flocks with high levels of humoral antibodies did not have as high a morbidity and mortality rate when infected with VVND. However, the antibodies resulting from vaccination did not prevent infection and made infected flocks more difficult to detect. Mass vaccination should not be used in future VVND eradication programs unless better vaccines become available.

Sentinel animals and birds have been utilized on a number of occasions to monitor the presence of several diseases. Calves and pigs have been placed with cattle to detect the presence of foot-and-mouth disease virus. More recently, susceptible equines and other animals were placed in strategic areas to detect any recurrence of Venezuelan equine encephalitis (VEE), the horse sleeping sickness that invaded south Texas in the summer of 1971. Similarly, the sentinel bird program in southern California involved placing unvaccinated chickens to detect infection in heavily vaccinated flocks which did not show symptoms (fig. 8).

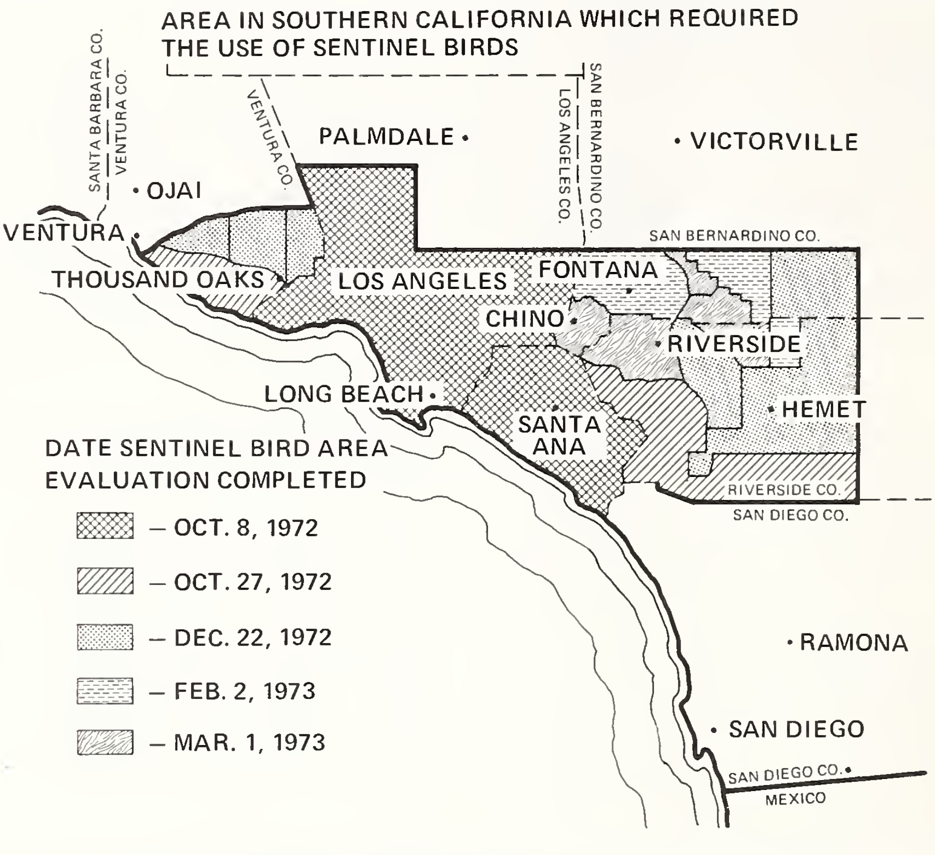


Figure 8.—Area in southern California that remained under quarantine on Aug. 19, 1972, that required the use of sentinel chickens to evaluate the vaccinated poultry population for VVND virus infection.

As early as May 1972, field and laboratory diagnosticians were aware of an increasing problem in diagnosing VVND caused by repeated vaccination in commercial and backyard flocks. Owners were not observing a dramatic death loss or classical symptoms in their flocks. Birds in heavily vaccinated layer flocks at first did not show typical symptoms and lesions, but did show a reduction in egg quality and a significant loss in egg production.

The Task Force began making some use of nonvaccinated, pathogen-free sentinel chickens to detect the presence of VVND virus. These birds were placed on ranches where it was believed the disease might exist. Isolations of VVND virus from these sentinels provided a tentative diagnosis of VVND.

Further investigation and necropsy of dead and sick birds revealed some lesions of VVND in all flocks where virus was isolated in sentinels. Specimens taken from birds with lesions were sent to the laboratory where virus isolation and characterization confirmed the tentative diagnosis of VVND.

This diagnostic procedure was immediately recognized as having a great potential for evaluating flocks where repeated vaccinated had caused symptoms to be masked.

The Task Force's technical staff recommended initiation of an expanded program using sentinel birds to evaluate large areas for the presence of VVND. Statisticians recommended placement of 1 sentinel bird per 1,000 in commercial flocks using a minimum of 30 sentinels per flock. Sentinels were also placed in 5 percent of all backyard flocks in areas where VVND had not been diagnosed, and in 10 percent of backyard flocks in areas where VVND had been diagnosed. Such an undertaking would call for a type of bird not readily available. Requirements included several criteria:

1. They had to be highly susceptible to the VVND virus.
2. They had to have no immunity to VVND, either passive or acquired.
3. They had to be available in large quantity and on relatively short notice.
4. They had to be a species that would be compatible with the laying chicken, as this was the major group of birds that were to be evaluated.
5. They had to be specific pathogen free (SPF) for all diseases of chickens and turkeys.
6. They had to be readily identifiable.

The Sentinel Birds

In mid-June 1972, the Task Force began using sentinel birds on an expanded basis in commercial and backyard flocks to help detect VVND.

Specific pathogen-free (SPF) birds in the large numbers required by the Task Force were not available in California or elsewhere on the west coast. A supplier was located on the east coast in Connecticut. Here, Leghorn strains were raised in a nearly disease-free, closed environment which was equipped with a filtered positive-air pressure system. During this time, they were bled and tested for 26 different avian diseases, including Newcastle disease. The east coast supplier normally shipped the birds and eggs for research and laboratory purposes throughout the United States.

Since cockerels served as well as pullets, there was a predominance of males, because the supplier could sell pullets and eggs elsewhere. Most of the sentinel birds were immature roosters 6 to 10 weeks old. Since these birds were relatively small, large numbers of them could be transported by air and held until placed on ranches. Although 6-week-old birds were the smallest size acceptable, it was difficult to obtain blood samples from them. Losses from shipping and handling were greater than with older birds. In some instances, spent layers and adult roosters were used. When the birds arrived, they were bled to assure they had no antibodies against Newcastle disease and then were placed in commercial and backyard flocks as rapidly as possible.

This east coast supplier contracted to raise and ship birds at 6 weeks of age or older. A lead time of 10 weeks was needed—1 week to accumulate enough eggs from the breeder hens, 3 weeks for incubation, and 6 weeks to grow in a brooder house.

At first, the sentinels were flown to California by commercial air freight. Because proper life-support systems were lacking in the cargo areas of planes, many birds were dead on arrival. Later, charter flights allowed the Task Force not only to have better control of biological security during shipment, but also to ensure stable arrival of the sentinels. In mid-October, special charter jet flights—each accompanied by a Task Force veterinarian and livestock inspector—began delivering the sentinel birds nonstop direct from Norwich, Conn., to Ontario, Calif.

An extensive effort was put forth to maintain these sentinel birds free and apart from any other birds. A high degree of security was required to make sure they never became exposed or infected with any agent pathogenic for poultry, especially VVND. It would have been disastrous if Newcastle, or any other disease, had been introduced into the sentinel bird flock.

The sentinels were kept in an isolated compound at the airport in air-conditioned quarantine trailers outfitted with standard layer cages. Birds were placed in these cages under conditions similar to their previous home in the east coast until needed for placement in southern California poultry flocks. Only Task Force employees assigned to the sentinel bird program were allowed on these premises.

Sentinel birds identified by large wing tags were placed in disposable boxes and transported to the farm in closed vans.

After the sentinels were placed in commercial or backyard flocks, Task Force employees observed them weekly and bled them for Newcastle antibody testing at 14 and 28 days. Owners observed the sentinels frequently and were told to report all illness and death. Sick and dead sentinels were submitted to the laboratory for careful examination and culturing for VVND virus.

In most cases, the sentinels would show signs of VVND in 4 to 7 days if flocks were infected. If the sentinels did not develop VVND, the flocks or areas being considered were deemed safe for release from quarantine. In any event, the birds were used only once and after a 30-day duty period in a "clean" flock, they were either given to the owner or destroyed.

The sentinels were placed on an area-by-area basis. A large part of a county and, in some instances, an entire

1072x1437-20

1072x1437-4

1072x1433-18

0374x372-16

1072x1432-28

1072x1432-12

1072x1432-9

1072x1431-26

The sentinel bird program was one of the more successful—and controversial—aspects of the eradication campaign in southern California. Flown as jet cargo from a specific disease-free environment in Connecticut, these special chickens were held in a high-security compound at the Ontario, Calif., airport until they were placed in commercial or backyard flocks. Because of the massive vaccination effort, infected flocks did not always show overt signs of exotic Newcastle disease. But highly susceptible sentinels placed in such flocks would quickly sicken and die. Laboratory tests could then confirm the presence of exotic Newcastle disease.

Some ranchers resisted placement of the sentinels—obstensibly because they would introduce disease, but actually because the poultrymen felt indemnity payments were too low and they feared that the sentinels would detect infection in their flocks. During the 8 months the program was in operation, over 37,000 sentinel chickens were placed on 458 commercial ranches and in 2,594 backyard flocks. These birds located infection in 26 commercial and 3 backyard flocks.

Even though the sentinel bird program was phased out, "Sentinel Sam"—as the birds were dubbed—became established as the Task Force mascot and symbol.

county would be "sentineled" at one time so that quarantines could be released from relatively large geographic areas. Without the sentinel birds, there was no good way of knowing when areas could be safely released from quarantine.

Results of the Sentinel Bird Program

Initially, the sentinel bird program was not well accepted by the poultry industry in southern California. Some producers feared other diseases would be brought into their flocks. Others were concerned that the sentinels would detect infection in their flocks and that indemnity payments were not adequate to compensate for their losses. The Task Force sentinel program was operating under State authority and, in October 1972, four producers obtained a State court injunction prohibiting the placement of additional sentinel birds. This delayed the program approximately 45 days during the most active phase of its operation. A Declaration of an Extraordinary Emergency on November 10, 1972, by the Secretary of Agriculture, provided Federal authority for placement of sentinels and the program was resumed. Shortly before that, the Secretary had announced approval of additional indemnity.

The sentinel bird program was costly—the average cost was $29 per bird, including the costs of purchase, shipment, placement, and testing. At the height of the program (November and December 1972), 85 Task Force personnel were engaged in the many aspects of this phase of disease detection. During the 8 months the sentinel bird program was under way (June 1972 – February 1973), slightly over 37,000 sentinel chickens were placed in six counties. A total of 23,859 sentinels were placed on 458 commercial ranches and 13,281 were placed in 2,594 backyard flocks. These birds were responsible for locating exotic Newcastle infection in 26 commercial and 3 backyard flocks.

Even with these costs, there were compelling reasons for the sentinel bird program. With the completion of the first rounds of the intensive vaccination program, investigation of reported sickness could no longer be considered an effective disease detection system. The incidence of new cases of infection had decreased from a high of about 25 a week in late February to about 5 a week in June.

Most cases of the disease diagnosed after late May 1972 were found in young birds where the vaccine did not offer adequate protection. The disease was usually found shortly after these young birds were moved to laying hen facilities where they came in contact with older birds. The masking of clinical signs of the disease in older, vaccinated birds dictated the need for a sensitive, mass-screening surveillance system—such as the sentinel bird program. A summary of sentinel bird placement is contained in Appendix I (*see* p. 83).

EPIDEMIOLOGICAL NECROPSY SURVEILLANCE (ENS)

In February 1973, the sentinel bird program, which had proved so controversial just a few months previously, was phased out.[8] Replacing it was the epidemiological necropsy surveillance (ENS) program that had started at about the same time. In July 1972, Task Force epidemiologists began sampling normal death losses from San Bernardino County poultry ranches. Tracheal and cloacal swabs taken from dead birds were sent to the laboratory for diagnosis. That same month, all dead birds were collected from a few ranches for 7 to 10 days. Early infection was confirmed by this method; often, because vaccination was masking symptoms, the virus was found before ranch owners became aware of the presence of VVND in their flocks.

This interim diagnostic method, used to supplement the sentinel bird program, was soon recognized as a highly efficient diagnostic tool. More commonly known as the dead bird pickup program (*see* p. 71, Appendix D). ENS was expanded during the fall and winter of 1972-73 to become the major surveillance program. A similar program was developed for the pet bird industry.

San Diego County was organized for ENS pickups in early November 1972 with 188 dead bird pickups being made from 40 ranches. Evaluation of San Diego County for release of quarantines was accomplished by ENS dead bird pickups and owner submissions, with no sentinel birds being utilized. The success of the San Diego County operations and increased laboratory capability led to the extension of the ENS program to the remainder of southern California poultry areas.

At its height the ENS program covered 6 of the original 8 counties under quarantine and involved 542 commercial poultry ranches.

---

[8] Even though the sentinel bird program was eliminated, "Sentinel Sam," as the birds were dubbed, became established as the Task Force mascot and symbol.

Epidemiological Necropsy Surveillance (ENS), or the dead bird pickup program, replaced sentinel birds as a diagnostic tool. This program involved the weekly collection from commercial poultry ranches of the "routine" deaths. Dead birds were placed in plastic bags inside garbage cans at the front gates of poultry facilities. There they were picked up by Task Force personnel and taken to the laboratory for examination and testing. Date for pickup was posted on the cans.

The value of the ENS program was proved in the fall of 1972. During October, 15 percent of the cases diagnosed were from specimens submitted to the laboratory through this disease-detection program. This increased to 42 percent in December and to 75 percent from April through June 1973. Lower cost of the ENS program was another plus factor. It averaged $142 per ranch per month for ENS compared with $900 per month for placing sentinel birds on a ranch. The widespread use of ENS was possible only after considerable expansion of the laboratory facilities and development of mass-screening techniques.

ENS Collection

When the ENS program was standardized and began operating in the entire original quarantine area, drivers continued to cover San Diego County. Other drivers worked in the concentrated poultry areas in San Bernardino, Riverside, Orange, Los Angeles, and Ventura Counties. Each driver had different daily routes. There were a combined total of 45 routes in the counties involved, with a total of 542 commercial flocks being visited each week. Counties and total number of flocks listed on ENS routes were as follows:

Riverside	128
San Bernardino	180
San Diego	162
Ventura	12
Orange	33
Los Angeles	27
TOTAL	542

ENS Diagnostic Examination

Diagnostic methods used in the ENS program were similar to those used in collection of specimens from birds submitted to the laboratory by diagnosticians and poultry personnel (*see* Diagnosis, p. 18).

Finding typical lesions of VVND in birds at a ranch in conjunction with the virus isolate was considered diagnostic. If lesions were not found, tracheal and cloacal swabs were made from a minimum of 50 birds for use in laboratory attempts to verify that the virus characterized actually came from the ranch in question.

Because of the remote chance that specimens might lose their correct identity between ranch and laboratory, a flock was not considered to be positive for VVND with the characterization of a single ENS isolate. Task Force diagnosticians visited such flocks and conducted necropsies of dead and sick birds to confirm the diagnosis.

Results of the ENS Program

ENS collections of dead birds began in August 1972 and continued through June 1974. A total of 22,548 ranch stops were made and owners contributed 118,084 dead birds for laboratory examination (*see* p. 74, Appendix E). ENS enabled Task Force diagnosticians to identify 16 ranches infected with VVND. It also provided a way to monitor flocks in each area for a period of 1 year following depopulation of the last positive flocks.

Veterinarians and poultry service personnel confirmed reliability of ENS after numerous disease investigations. After May 1973, all tissues and swabs from such investigations and random sampling of slaughter poultry at processing plants were negative for VVND virus. Continual isolation of non-VVND viruses from collected birds proved that this method of surveillance was capable of diagnosing the presence of Newcastle virus in poultry flocks.

DISEASE PREVENTION PROGRAM

The epidemiology section studied each case of VVND very carefully to develop the most likely source or sources of the virus. During these extensive studies, many of the same factors were encountered in positive flocks where the source of infection could not be determined to be direct movement of infected birds or proximity to infected flocks. These factors were identified and served as the basis for the disease prevention program.

The first factor identified as a potential means of spreading virus from one premises to another was fibrous egg flats. These flats were used on one farm, delivered to the processing plant, and then sent out to other farms. Since this type of egg flat could not be washed, they were returned to farms at random with bits of eggshells, yolk, and manure clinging to them. In effect, they were going from one premises to another until they became unusable. To correct this problem, the Task Force purchased plastic egg flats for use by the industry. These plastic flats could be readily cleaned and disinfected between each use.

The Task Force also provided disinfectant, boot brush and bucket, and disinfectant proportioners[9] for each commercial poultry ranch.

Because there had been several instances where many ranches on the same egg route became infected one after the other, the Task Force designed and tested a special egg rack washer. This egg rack washer effectively cleaned and disinfected egg carts.

Feed dealers and egg producers were encouraged to install automated truck washing and disinfecting equipment.

The disease prevention program was well accepted and a high degree of compliance was obtained. Unfortunately, it was not fully implemented until late in the eradication program. A full-scale disease prevention program was begun in 1973. Some 20 personnel were assigned to the program. Basically, the program consisted of individual contacts with the owners and allied industries to explain how the disease was being spread and methods they could employ to stop the disease (*see* p. 75, Appendix F). This program appeared to have a strong impact on the final eradication effort.

PRIMARY METHODS OF DISEASE SPREAD

The three primary methods of disease spread continued to be (1) Movement of infected birds, particularly spent hens; (2) movement of contaminated equipment, such as egg carts; and (3) movement of man, including vaccination and debeaking crews, feed truck drivers, manure haulers, fly control officers, ranch managers, cull hen buyers, and visitors.

There was strong epidemiological evidence that the organized effort to vaccinate all birds in southern California contributed as much to the spread of VVND as any other factor. Personnel untrained in disease prevention methods traveling rapidly from premises to premises often carried VVND virus with them.

OTHER FACTORS IN DISEASE SPREAD

During the course of the outbreak, Task Force epidemiologists investigated a number of other factors that could have contributed to the spread of VVND.

Santa Ana Winds

In the early days of the outbreak, high winds had been implicated by circumstantial evidence as a spreader of the disease. In retrospect, this does not appear to be the case. Although the disease did appear to be moving in the direction of the Santa Ana winds in early 1972, when the high winds occurred again the following year (December 1972 to January 1973), there was no spread of the virus from infected ranches to other poultry ranches downwind. In one instance, a poultry ranch was situated less than 100 yards downwind from an infected

---

[9] A small inexpensive unit for attachment to a regular water faucet to which a garden hose could then be attached. The proportioner would meter into the stream of water the correct amount of disinfectant required.

Adoption of cleaning and disinfection procedures by commercial vaccination crews was one of the practices promoted in the disease-prevention program. Crews who followed good procedures were recognized with certificates of appreciation presented by Task Force officials.

premises—with three additional ranches within the next mile—yet no disease spread occurred. Wind may have been responsible for a small percentage of cases, but it was not important enough to affect the total eradication effort.

Role of Wild Birds

Throughout the long eradication campaign, there were questions on the role of wild birds in the dissemination of the disease. The Task Force did not ignore this potential problem. Early in the campaign, studies were begun to determine the involvement of wild birds in the spread of exotic Newcastle disease.[10]

A total of 9,446 free-flying wild birds, including 71 different species, were collected and tested. In most instances, the birds were captured in the vicinity of infected premises. VVND virus was isolated from only four birds—three house sparrows (out of 1,817) and one crow (out of 472). From these extensive studies, the Task Force concluded that free-flying wild birds were not a factor in the spread of exotic Newcastle disease in southern California.

Table 3 summarizes the Task Force's efforts in this area. Detailed data are contained in Appendix H (*see* p. 78).

Insect Vectors and Rodents

The importance of insect vectors was also considered. Results of early field studies indicated that flies of the genus *Fannia* could harbor the virus for at least 24 hours. Additional studies showed that the lesser house fly, *F. canicularis* (L) could mechanically transmit the virus from bird to bird. Based on these studies, a fly control program was started for infected ranches in September 1972.

A rodent control program was also begun following the discovery that mice living in poultry droppings on infected ranches could habor the virus.

Table 3.—Data on Spread of VVND by Wild, Semi-Domestic, and Exotic and Pet Birds

Bird Type	*Total collected*	*Results/No. Tested*				
		Hi Tests		*Virus Isolations*		
		No. Positive	*Reciprocal Dilution Range*	*VVND*	*Percent VVND*	*ND (other than VVND)*
Free-flying indigenous wild birds	9446	9/3796	10-160	4/9446	.04	27/9446
Free-ranging and captive semi-domestic birds .	4367	173/2004	10-5120	33/4367	.76	72/4367
Exotic and pet birds	3940	9/231	10-80	37/3940	.94	6/3940

COURSE OF THE OUTBREAK

The original infected flocks were centered around Fontana, Ontario, Glen Avon, Upland Chino, and Mira Loma. But, by the time the Task Force took over, infection had spread to new areas including Moorpark, Lake Mathews, Moreno, Sunnymead, Woodcrest, Highland, Monrovia, Thousand Oaks, Reseda, Saugus, Covina, Norco, San Dimas, Murrieta, Placentia, Orange, Colton, and Riverside. These were the areas where the Task Force concentrated its efforts.

While known infected and exposed flocks were being eliminated, State and Federal veterinarians continued their search for new infection. Table 4 below shows, in 4-week periods, how infection spread.

---

[10] A wildlife expert from the University of Georgia was brought in to advise the Task Force on its wild bird studies.

Table 4.—Number of infected and exposed flocks, March 12, 1972, to June 30, 1973, based on date first sick

Four-week periods	*Number of flocks—*		
	Infected	*Exposed*	*Number of birds*
Mar. 12 - Apr. 8, 1972	33	17	192,241
Apr. 9 - May 6, 1972	44	51	702,685
May 7 - June 3, 1972	19	57	370,079
June 4 - July 1, 1972	18	97	141,270
July 2 - July 29, 1972	24	44	197,566
July 30 - Aug. 26, 1972	6	52	332,870
Aug. 27 - Sept. 23, 1972	6	31	3,528,999
Sept. 24 - Oct. 21, 1972	8	19	254,333
Oct. 21 - Nov. 18, 1972	11	12	451,993
Nov. 19 - Dec. 16, 1972	17	104	1,142,947
Dec. 17 - Jan. 13, 1973	17	155	831,263
Jan. 14 - Feb. 10, 1973	15	202	308,773
Feb. 11 - Mar. 10, 1973	9	28	250,204
Mar. 11 - Apr. 7, 1973	1	6	149,094
Apr. 8 - May 5, 1973	3	5	180,104
May 6 - June 2, 1973	0	0	0
June 3 - June 30, 1973	1	0	55,200
Total[1]	232	880	9,089,621

[1] Does not include flocks infected November 1971 to March 12, 1972.

Arizona Outbreak

During the first 4 weeks of Task Force operations (March 12 to April 8, 1972), sickness was first noted in 33 infected flocks and 17 flocks were exposed to them. This included commercial laying operations, backyard flocks, and some exotic birds in pet shops and aviaries.

During this period, the Task Force extended its activities into Arizona following an outbreak in game chickens (*see* p. 77, Appendix G).

The eradication of exotic Newcastle disease in Arizona during April and May 1972 removed a threat of extension of the disease throughout the western part of the United States and enabled the Task Force to concentrate its effort on the areas of infection in southern California.

Hatchery Outbreak

On April 21, 1972, Task Force veterinarians investigated sickness in a backyard flock of chickens in the city of Los Angeles. The owner had purchased groups of over-the-counter chicks from a hatchery on March 20 and April 4. Before the investigation started, all these chicks had died, with some showing respiratory difficulties. By the time the investigating veterinarians arrived, nearly all the adult chickens in the 75-bird flock were showing signs of VVND.

On April 22, two more backyard flocks in Los Angeles reported signs suspicious of VVND in chicks purchased on April 8 from the same hatchery. In one flock, one-half of the pullets had died during the previous 2 days. Post-mortem examinations showed lesions suggestive of VVND, which was later confirmed by laboratory tests and virus isolations. The hatchery was informed of the situation and a hold order placed prohibiting further sales. Diagnostic investigations at the hatchery that day revealed lesions of VVND in chickens and ducks. The laboratory isolated VVND virus 7 days later.

In the days following, more backyard flocks were found to have infection, the common factor in each case being over-the-counter purchase of chicks from this hatchery. In addition to poultry, the hatchery sold a variety of birds and supplies, including doves, parakeets, fighting cocks, and feed. There was constant, heavy traffic of people in and out of the front end of the premises. The hatchery also had a mail-order business in chicks conducted at the rear of the premises.

Task Force records indicated that the hatchery had been issued 225 movement permits involving about 26,000 birds. Consignees were located throughout California, including 33 different counties in northern California which were outside of the quarantine zone. Some 192 movements, involving 19,000 birds, went to these counties.

On April 27, 1972, the Task Force ordered destruction of all shipments made after March 20 from this hatchery. The problem of finding these shipments was compounded by the fact that many had been made to feed stores and pet stores. The stores in turn resold the chicks in smaller lots to a number of different customers. Intensive investigation led to the tracing of 334 purchasers of the chicks. Where any sign of disease was found, all other associated birds were destroyed.

Most infection appeared to be spread by direct over-the-counter sales at the front end of the hatchery. Chicks shipped by mail order from the rear end of the hatchery had little contact with older birds at the front end.

Tulare, Fresno, and Kings County Outbreaks

Two outbreaks traceable to shipments from this hatchery occurred outside the quarantine zone. In mid-April, a feed store in Dinuba, Tulare County—about 200 miles north of Task Force headquarters in Riverside—had resold chicks to a poultryman who in turn exposed a nearby commercial poultry ranch and two small backyard flocks in Fresno County, close to the town of Reedley.

Following the disclosure of the disease in early May, the Task Force established a headquarters unit in Dinuba. An extensive disease surveillance, vaccination, and quarantine enforcement campaign began within a 140-square mile area placed under a hold order by the State of California on May 5. No movement within or out of the 10- by 14-mile area was allowed without a permit from the Task Force.

About 25 miles southwest in Lemoore, Kings County, another backyard flock became infected from chicks purchased from the Dinuba feed store; and on May 11, a similar State hold order was placed on a 100-square mile area there. Infected and exposed premises were cleaned and disinfected and no further spread of the disease took place.

The hatchery outbreak spread infection to 25 flocks. Over 10,000 birds were destroyed in these two outbreaks. Prompt and decisive action prevented widespread extensions from these outbreaks.

Seasonal Decline

From June 4 to July 1, 1972, sickness was first noted in 18 infected flocks and 97 were exposed to them. The decreased incidence of infected cases was attributed to Task Force eradication efforts combined with a possible seasonable decline (fig. 9). This decreasing trend continued through the remainder of the summer.

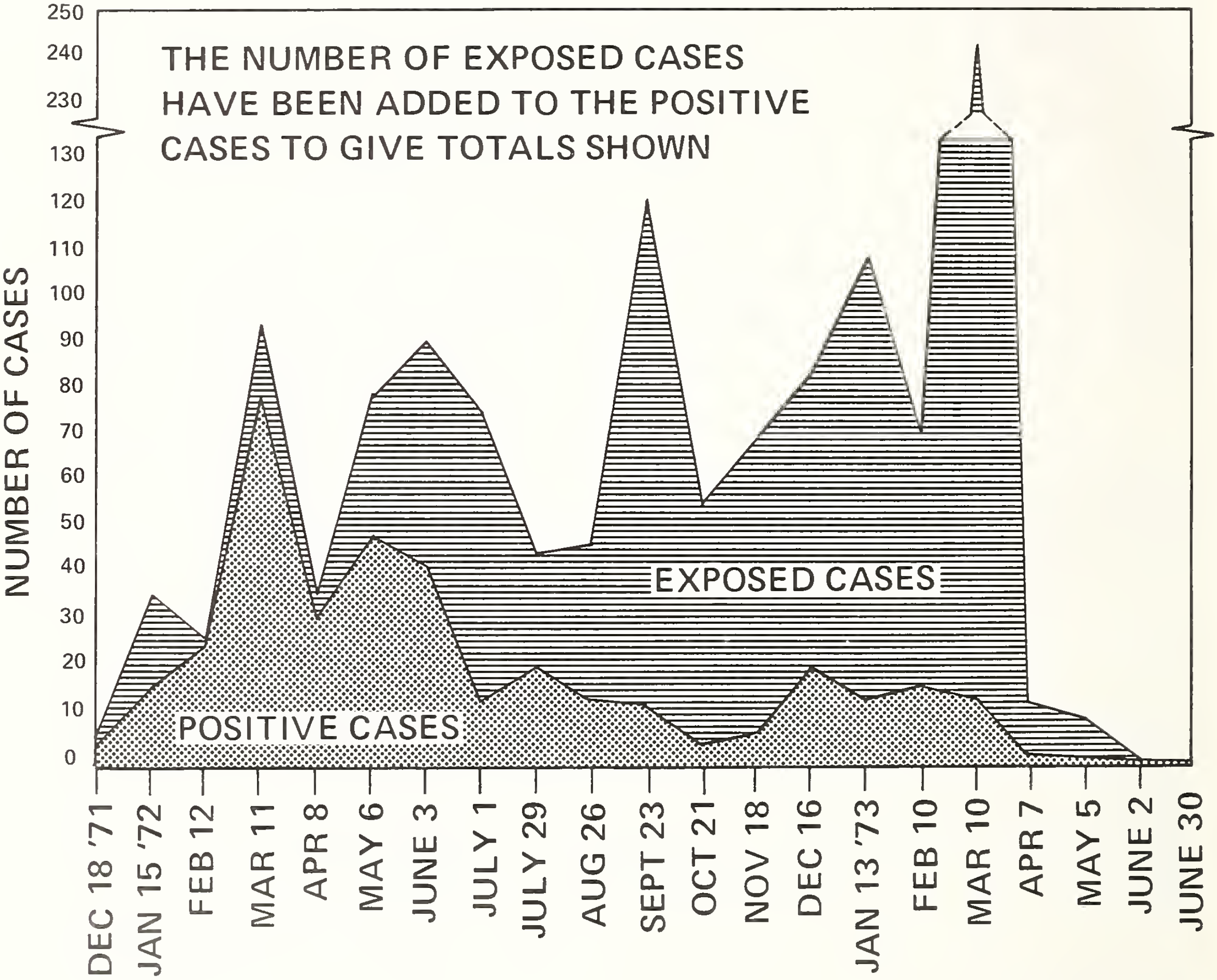


Figure 9

Infection Moves to Moorpark

From July 30 to August 26, infection occurred in 6 flocks and 52 flocks were exposed to them, involving a total of nearly 333,000 birds. Two of the three commercial flocks affected were in Moorpark, Ventura County; one, in Beaumont, Riverside County. By this time, very few cases were occurring in the central area of the quarantine around Fontana where the disease first broke out. Infection seemed to be confined mainly to the Moorpark area to the west and to the Cherry Valley-Yucaipa area in Riverside and San Bernardino Counties to the east. Both areas had dense poultry populations with numerous premises in close proximity and had much human traffic between flocks by workers, salesmen, vaccination and debeaking crews, and other visitors.

Egg City

From August 27 to September 23, 1972, sickness was first noted in 6 infected flocks and 31 were exposed to them. Of the four commercial operations involved, three were in Moorpark, Ventura County.

The largest of these flocks was also the world's largest poultry facility. Egg City was a 3.4-million-bird laying operation. Located on a 209-acre hillside a few miles northwest of Moorpark were 2.76 million laying hens. A hatchery-grower complex for young pullets a few miles away and a pullet flock at Arroyo Grande made up the remainder of the birds. This single operation contained about 11 percent of southern California's layers and over 1 percent of the Nation's total. Egg City's chicken population almost equaled that of New Jersey; it had a million more hens than in the entire State of Massachusetts; one-half million more than in Oklahoma; and as many as in Kentucky.

VVND was found in the Moorpark area long before it was diagnosed in Egg City. In February 1972, a flock of 150,000 layers about 2 miles away was found to be infected. Traceback showed that the disease had moved into this flock and into the Moorpark area with a group of spent hens[11] purchased in the original outbreak area early in the year. VVND was found in both backyard and commercial flocks through the spring and summer of 1972.

Egg City's laying hens included the entire age range from hatching eggs up. Older birds were force molted to stimulate continued egg production. Included in the operation was a pullet flock at Arroyo Grande in San Luis Obispo County, nearly 200 miles up the coast and well outside the quarantine area. Also included was a hatchery-grower complex about 5 miles directly west of the main operation.

Egg City employed its own veterinarian and had a well-equipped laboratory. Its well-supervised vaccination program consisted of La Sota vaccine administered intramuscularly at 4 weeks; Kimber, intramuscularly at 9 weeks; and Roakin, intramuscularly at 19 weeks. In July, a Task Force veterinarian was stationed exclusively at Egg City to supervise application of vaccines under the Task Force vaccination program. He worked only at this one place to preclude the possibility that he might bring the disease to Egg City hens.

Although entirely surrounded by a high fence with entrance only via a guarded gate, Egg City was unable to escape infection. Some 400 employees worked there. Even though employees were prohibited from having poultry at home, many did. Others often visited friends or neighbors who owned poultry. The disease was in the area. Salesmen and feed vehicles that visited other poultry ranches around Moorpark also stopped at Egg City. Thus, biologic security, though good, was not perfect.

The work of placing 1,500 sentinel chickens in the Egg City facility began in late August. Within a few days, some sentinel birds began showing signs of sickness. By the fifth, sixth, and seventh days after placement, sentinels which died showed lesions of VVND. Tests at the San Gabriel laboratory confirmed the disease and this was announced on September 7, 1972.

Infection was found in each of the 19 houses where sentinels were placed. The 36 houses on the main facility could each hold up to 96,000 birds. Mortality of the sentinels ranged from 11 to over 50 percent. Egg City's egg production records continued relatively steady through July and August. During the week of September 4, however, a decline became evident and eggshell quality showed some deterioration.

Following official appraisal of the 3.4-million-bird flock, a contract was arranged with Egg City officials to

---

[11] See footnote 7.

JULIUS GOLDMAN'S EGG CITY
PACKING AND PROCESSING PLANT
GENERAL OFFICES AND LABORATORIES
EMERGENCY PROGRAMS

On September 7, 1972, USDA officials announced that VVND had been confirmed at Egg City, the world's largest poultry operation. Carved out of a mountain side, the main facility consisted of 36 houses, each capable of holding up to 96,000 laying hens. Depopulation of the 3.4 million birds began the next week, following appraisal of the flock. On November 24, 1972, the last bird was killed. Cleaning and disinfection operations, completed in late December, were followed by a 30-day evaluation with sentinel birds, after which Egg City was allowed to restock and begin operations again.

provide the labor to eliminate the infected flock.[12] Destruction was carried out at the rate of 60,000 to 90,000 birds per day by using carbon monoxide in specially built plywood chambers fitted with removable racks. Dead birds were hauled to rendering plants in covered trucks.

By November 24, 1972, all 3,422,356 chickens at Egg City, its nearby hatchery-grower complex, and its pullet flock at Arroyo Grande had been destroyed. A monumental task of cleaning and disinfecting the premises followed. After evaluation with the help of sentinel birds, Task Force officials allowed Egg City to restock.

In addition to Egg City and several other infected commercial laying flocks in the Moorpark area, some 169 backyard flocks in the vicinity were exposed to the virus. In September, these flocks were appraised and destroyed and the premises cleaned and disinfected.

One backyard owner refused to depopulate even though his premises were located close to two commercial flocks that had been infected. In November 1972, a local magistrate signed an order enabling Task Force personnel operating under the Extraordinary Emergency (*see* page 60) to enter the premises, destroy all poultry, and clean and disinfect the premises. No indemnity was paid to the owner.

Further Incidence of VVND

Task Force epidemiologists estimated that the inability to place sentinel birds during the late summer and early fall delayed ultimate eradication of the disease by as much as 6 to 8 months. The arrival of cold, wet weather in November brought about an increase in incidence of VVND. The lower temperatures stressed the birds and also aided survival of the virus.

From November 19 to December 16, 1972, sickness first occurred in 17 infected flocks, and 104 were exposed to them. These flocks consisted of over 1.1 million birds (*see* table 4, p. 51). This included 9 infected commercial flocks averaging over 100,000 birds and an additional 5 exposed commercial flocks averaging over 26,000 birds. Most of the infection during this period was concentrated around the towns of Yucaipa, Redlands, Cherry Valley, Glen Avon, Woodcrest, and Riverside in San Bernardino and Riverside Counties.

Infection in Norco

From December 17, 1972, to January 13, 1973, sickness was first noted in 17 infected flocks, and 155 were exposed. This included 6 commercial flocks containing over 618,000 hens (one flock had nearly 319,000 birds). The total number of birds involved during this period was 831,000.

Infection at this time occurred around Ontario, Highland, and Yucapia in San Bernardino County and near Beaumont, Riverside, Corona, and Norco in Riverside County. The great majority of the 155 exposed flocks were backyard flocks in and around the community of Norco.

From January 14 to February 10, 1973, sickness was first noted in 15 infected flocks, and 202 were exposed to them. During this period, the great majority of exposed flocks again were small backyard operations in Norco, Riverside County.

Much of the disease problem at this point was concentrated in and around the city of Norco. Eliminating this pocket of infection was the last serious obstacle to completion of the job of eradication.

The Norco community had been zoned and built to accommodate people who wanted to own livestock and yet have the convenience of living in a city environment. A high percentage of the residents maintained riding horses; some had cattle or hogs; and almost all had a small backyard flock of chickens, ducks, geese, or other birds.

Exotic Newcastle disease first hit a commercial flock in the Norco area in early January 1973. Later investigation indicated that free-roaming ducks had spread the disease from a nearby group of fancy chickens. Several backyard flocks had become infected during the latter part of December, and additional backyard and commercial flocks contracted the disease in the ensuing weeks. There were over 700 individual small flocks of various types of birds in Norco and a number of commercial operations. Many birds from the backyard flocks roamed freely through the community.

---

[12] The owner of Egg City was paid a total of $7,135,429.85 in indemnities for his flock. The average price per bird was $1.51. In addition, he received $1,654,634.93 for feed, eggs, and other materials that had to be destroyed. Broken down, the figures are as follows:

Item	Average price	Number	Indemnity
Chicks	$ .77	265,225	$ 204,455.75
Pullets	1.45	395,299	575,129.00
Laying Hens	1.59	2,761,832	4,381,589.22
Indemnity Supplemental	---	---	1,975,255.88
Total			$7,135,429.85
Indemnity for feed, eggs, and other materials destroyed			1,654,634.93
Grand Total			$8,790,064.78

The Task Force found it necessary to deal with all birds in the Norco area as if they were in one, large, scattered flock. Therefore, the city was declared a high-risk area. On February 15, 1973, with the cooperation of city officials, the Task Force scheduled a public meeting in the Norco City Council chambers to explain the measures planned to wipe out the disease.

On February 16, a special office was established in the Norco City Parks office. Information about the new program measures in the community were hand delivered door-to-door. These new measures required owners to keep all birds confined in structures closed on all sides and the top so that birds could not escape and run free. Sentinel birds were placed in a number of these closely confined flocks. All birds not so confined by February 18 were considered to be exposed to exotic Newcastle and were destroyed.

The entire Norco area, covering about 30 square miles, was divided into nine roughly equal-sized blocks which were surveyed thoroughly, one at a time. Field crews moved rapidly through the blocks, surveying, appraising and purchasing flocks, destroying birds, and cleaning and disinfecting the premises.

By the end of March 1973, 301 backyard flocks and 4 commercial ranches—totaling some 120,000 birds—had been depopulated. Surveillance continued but no additional infected flocks were found in the community.

PUBLIC MEETINGS

On June 26, 1972, Task Force officials held a public meeting in San Bernardino to give the poultry industry in southern California an opportunity to express their views on the status of the eradication program. Unhappy with quarantine restrictions, handling of infected and exposed flocks, indemnity payments, and several other aspects of the eradication effort, 200 poultrymen and others attended the evening meeting. The main concerns involved indemnity payments—some commercial poultrymen felt they were not getting adequate compensation for their losses—and quarantine restrictions. The latter area involved a number of diverse groups with differing problems.

For instance, the San Bernardino area contained a number of backyard parakeet-raising operations. Many of these breeders, who raised from 2,000 to 12,000 birds, were retired persons who sold the birds for extra income. Task Force quarantine regulations prohibited the movement of these birds—thus effectively eliminating a market for them. Importers and exporters of exotic birds were also concerned about these movement restrictions.

Several turkey breeders within the quarantine area were caught in a position where they could not market their productions and, at the same time, the Task Force could not pay them indemnity because the birds weren't diseased.

Some owners of racing pigeons were irate because Task Force regulations did not permit them to fly their birds. After the meeting, regulations were altered to provide for pigeon "loft flying."

While not many of the complaints and problems were resolved, the June 26 meeting did give the individuals affected an opportunity to be heard, and Task Force officials were able to explain in greater detail the reasons behind the actions they were taking.

On July 3, following a meeting of the scientific advisory group in Washington, D.C., on June 29–30, 1972, the Department announced that a series of public meetings would be held in California to obtain industry and public comments on the progress and future direction of the emergency eradication program. Well-attended sessions were held on July 18, 1972, in Escondido; on July 19 in Los Angeles; and on July 20 in San Bernardino.

At the meetings, Task Force officials outlined plans for reducing the extent of the area under quarantine. Recommendations by poultry industry spokesmen were also discussed, including reducing quarantines, vaccination for commercial flocks, movement restrictions on poultry, reevaluation of indemnity policies, and at Task Force expense, the use of sanitized plastic egg flats between poultry ranches and processing plants.

Partly as a result of discussions at the meetings, the Task Force did begin supplying egg ranches with plastic egg flats that could be sanitized to supplant the commonly used fiber flats. Producers, however, were responsible for supplying the machinery, equipment, and labor to sanitize (disinfect) these plastic flats between uses. More than 3 1/2 million flats were provided.

At these meetings, Task Force officials expressed optimism on program progress: partly because of plans for freeing large areas from quarantine restrictions (done on July 28). This move was based on the fact that no disease had been found in these areas for 4½ months.

OPPOSITION TO ERADICATION EFFORTS

Certain segments of the poultry industry—both within and outside of the southern California quarantine area—had long maintained that the eradication program would not work; that it was a waste of public money; and that the southern California egg industry was being sacrificed to benefit egg producers in the rest of the country. Furthermore, they maintained that the industry and the public would be better off to give up, embark on a vaccination program, and live with exotic Newcastle disease. Cries for the end of the futile Task Force efforts most often surfaced when the eradication program suffered apparent setbacks, such as the discovery of the infectation at Egg City (*see* p. 53).

With very few exceptions, opposition of the southern California poultry industry was tied in one way or another to indemnity payments. Poultrymen felt they were not being adequately compensated for losses when their flocks were destroyed. Although Task Force appraisals were based on fair market value (specified by law), as egg prices moved up in the summer of 1972—after 2 years of severely depressed prices—the complaints of egg producers became louder.

By the fall of 1972, their complaints centered on one issue—egg producers claimed they should be paid not only for the replacement value of the hens destroyed, but also for their losses from the time their birds were destroyed to the time they were able to restock and get back into business. Allied industries such as feed mills and poultry suppliers also wanted compensation for their loss of business because of the destruction of infected flocks, even though there was no way under existing law that this could be done.

In addition to this opposition, Task Force officials were hit with the following problems in quick succession:

- A temporary restraining order (later rescinded, *see* p. 36) issued by a local judge just before the start of pheasant hunting season which prohibited the

0472x454-31

A charge that the Task Force was subsidizing owners of illegal fighting cocks through indemnity payments was just one of the problems the Task Force faced during the fall of 1972.

Task Force from enforcing quarantine regulations that would have interfered with operations of commercial hunt clubs.

- Complaints by commercial importers of exotic birds that the August 24, 1972, ban on such imports was deliberately aimed at ruining the pet bird industry in order to help poultry raisers.
- Newspaper stories detailing the roadside killing of pet parakeets taken from travelers leaving the quarantine zone.[13]
- Charges that the Task Force was subsidizing owners of illegal fighting cocks through indemnity payments averaging $25 a bird for game chickens.[14]
- Headlines about the $2,000 roller-skating cockatoo killed earlier in an infected pet shop (*see* footnote 5, p. 22).
- Stories about a well-known poultry scientist who told members of a Midwest poultry meeting that "you can't eradicate the disease in southern California."

During late September and October, the central fight over indemnities intensified, with the sentinel bird program the focal point of the poultrymen's opposition. Despite some objections, the Task Force continued to place the sentinels since most owners did not object.

Following confirmation of VVND at Egg City, the industry advisory committee requested increased payments for hens and pullets that were destroyed because of the disease. Such increased payments would have taken into consideration the income potential from eggs that could have been produced during the period required to get back into production. There was even a suggestion that the industry make an effort to get rid of the Task Force and its quarantines. The rationalization here was that other egg-producing regions throughout the country would quickly rally in support of higher indemnity payments.

On September 19, 1972, the chairman of the California Assembly Agriculture Committee, saying that State and Federal officials would wipe out poultry farmers if the eradication program was continued, scheduled an emergency hearing of the committee in Ontario. The September 20 hearing, attended by about 145 people, provided southern California poultrymen with a new forum for some old complaints: That poultrymen had no voice in the operation of the eradication program; that the existing program could not possibly eradicate the disease; and, most importantly, that they were not being properly indemnified for chickens that were destroyed.

On September 21, members of the southern California egg industry met with the Assistant Secretary of Agriculture for Consumer and Marketing Services and other top USDA and Task Force officials to tell them the same story: That indemnity payments were inadequate. Two new formulas for more equitable compensation were discussed: One presented by an economist and the other by a farm advisor with the California Extension Service.

Although sentinel birds were the focal point of much of the controversy over the exotic Newcastle disease campaign during the fall of 1972, the real issue was the amount of indemnity payments.

After listening to accounts of the economic plight of producers, the Assistant Secretary promised an answer on a new indemnification formula within a few days. However, he flatly refused to accede to requests to hold back on the placement of sentinel birds and the destruction of infected flocks, stating that these matters "weren't negotiable." APHIS's Administrator warned poultrymen that if California pulled out of the eradication program, the Federal Government would be forced to place a quarantine on the entire State and stop the disease at State lines. Four egg producers from Riverside and San Bernardino Counties who had banded together and hired an attorney countered by threatening court action against USDA if they did not get action within a few days.

---

[13] The Task Force altered this practice the day after the September 29, 1972, newspaper story (*see* p. 36).

[14] Law and regulation called for owners to be indemnified for birds at their fair market value.

On September 22, the scientific advisors met in Riverside and again reviewed and assessed the progress being made in the Task Force eradication effort. The advisory group recommended (1) a fourth round of vaccination in commercial flocks in the 8,000-square mile quarantine zone and (2) continued use of sentinel birds in all commercial flocks and in selected backyard poultry flocks. The group also called for a crash research program to find a more rapid diagnostic test; and to devise a method of importing exotic birds without risking reintroduction of exotic Newcastle.

On September 25, USDA announced an immediate increase of up to 25 percent in the rate of indemnities. Officials said the increase was made to reflect the increasing value of laying hens resulting from a jump of egg prices in the preceding weeks. The higher indemnification rate was not applied retroactively.

The indemnity announcement met with an immediate negative reaction from some southern California poultrymen and lawmakers. Spokesmen for the California Poultry Association,[15] which was formed the week before "to defend and protect the rights of the California poultry industry," called the new USDA indemnity formula "unfair, unrealistic, unjust, and absolutely unacceptable." Later that week, several State legislators and poultrymen met with the Governor of California in Sacramento to seek a halt to the eradication program. However, the Governor took no action.

On Thursday, October 5, the Secretary of Agriculture on a campaign trip labeled "Operation West," held a press conference in Sacramento. There he announced (1) the lifting of the Federal area quarantine from Los Angeles and Orange Counties and (2) that a new indemnity formula, which took into account the value of hens as "egg-laying machines," was retroactive to the March 14, 1972, Declaration of Emergency. In making the indemnity announcement, the Secretary said, "This change in the indemnity schedule is being made to properly reflect the actual value of flock operations."

Earlier that same day, in Pomona, four poultrymen, in the heart of the quarantine area, obtained a temporary restraining order that prevented the Task Force from placing sentinel birds on their ranches. On October 6, at a California Department of Agriculture hearing in Los Angeles, the same group of poultrymen again demanded an end to the use of sentinel birds. Task Force officials defended their use, pointing out that supplementary tests were made to confirm the presence of VVND virus before any flocks were destroyed.

On October 9, 1972, the Task Force released further details of the supplemental indemnity plan. Under the new schedule, poultrymen were paid an initial sum—based, as previously, on the replacement value of the bird—plus a supplemental indemnity calculated on the net income from the sale of eggs the hens would have produced had they not been killed. The supplemental indemnity was paid after an evaluation of the 26-week period following appraisal—the period considered necessary for a poultryman to safely restock and get back into break-even operation. Based on formulas developed by the University of California Extension Service, actual prices and production costs were fed into a computer which calculated the supplemental indemnities. If a poultryman would have made a profit during the 26 weeks following destruction of his flock, he was given a supplemental indemnity payment equal to the amount he would have made had his flock not been destroyed. If he would have broken even or lost money, no extra indemnity was paid.

On October 18, 1972, a Sacramento County Superior Court judge ordered the Secretary of Agriculture to appear at a November hearing to explain why he should not testify before a California Assembly Agriculture Committee hearing on exotic Newcastle disease. The judge set a show-cause hearing for November 14, 1972.

On October 27, the Task Force announced a further reduction in quarantines in Riverside, San Bernardino, and Ventura Counties—the only counties with areas still under quarantine for the poultry disease. This action reduced area quarantines from 4,200 to 2,300 square miles, lifting restrictions from southern Ventura County and from southern and western portions of Riverside County.

Following an October 27 hearing, the Superior Court of Los Angeles issued an injunction forbidding the Task Force from using sentinel birds in the four complainants' flocks.[16] Task Force officials complied with the order and said that they would also honor the written requests of other commercial poultrymen not to place sentinels. Only a few resisted the sentinels. The Task Force also announced that sentinels would continue to be placed on ranches where owners agreed to have the birds.

---

[15] The newly formed association, which consisted of only four or five poultrymen, sent a telegram on September 26, 1972, to the Department with copies to the U.S. President, the California Governor, and all California legislators and Congressmen. The telegram accused the Administration and USDA of asking the southern California poultry industry to "shoulder alone the economic burden of the entire country." It said the new indemnity rate would destroy the industry in southern California and raise the price of eggs for the housewife. Finally, it called for an immediate hearing with the Secretary of Agriculture.

[16] The authority for mandatory placing of sentinel chickens was based on an August 9, 1972, amendment to emergency regulations promulgated by the State of California on December 13, 1971. The civil complaint charged that the California Department of Food and Agriculture did not hold required hearings on the regulation requiring the use of sentinel birds, thus making the regulation invalid.

On October 31 and November 1, the advisory group met again in Riverside to look at the eradication program. Commenting on the legal skirmishing, the group said that the court ruling on sentinel birds could have a devastating effect on gains already made in the campaign to eradicate the disease. The advisors again went on record to support the eradication effort and told APHIS officials that "all steps must be taken to continue to implement and expedite the eradication program, including the use of sentinel birds."

EXTRAORDINARY EMERGENCY DECLARED

The impasse between the few dissident poultrymen and the Task Force was resolved on November 10, 1972, when the Secretary of Agriculture declared an Extraordinary Emergency.[17] This action gave the Task Force certain authority to conduct the eradication program under Federal authority, including the mandatory placement of sentinel birds. This in effect nullified the October 27, 1972, Los Angeles Superior Court injunction against the Task Force.[18] At the same time, the Task Force activated the new indemnity formula—announced more than a month earlier—which took into account the potential value of hens as "egg-laying machines" during the 26 weeks following depopulation of a laying flock.

The combination action—higher indemnities along with the powers of the Extraordinary Emergency—ended the small core of resistance and brought about a high degree of cooperation from the entire southern California poultry industry.

LIFTING OF QUARANTINE

The spread of exotic Newcastle had been markedly slowed by the end of February 1973. Thereafter, only sporadic, scattered cases of the disease were being diagnosed—principally by virus isolation from dead birds examined at the laboratory. Most new cases had few, if any, clinical signs; there was little or no disease spread from these infected flocks.

The spring of 1973 saw several extended periods when no new sickness was detected—the last 4 weeks in March, 2 weeks in early April, all of May, and most of June (*see* table 4, p. 51). This reduced incidence was reflected in reductions in the area under quarantine from 400 square miles in late May to 200 square miles in mid-June.

Although the Task Force could not know it at the time, the long-sought last case of exotic Newcastle disease in southern California was finally diagnosed in late June in a 55,200-bird turkey flock in the Romoland area of Riverside County. With sickness first noted on June 1, in some young poults, the suspected case was reported to the Task Force on June 15 and laboratory tests confirmed the diagnosis on June 28, 1972.

On August 30, 1973, at a press conference in Riverside, Calif., the Assistant Secretary of Agriculture announced the lifting of area quarantines from the final 125 square miles still under Federal restriction. Individual quarantines remained on only three premises; these were removed as soon as the required 90 days following cleaning and disinfecting had been completed. The last premises quarantine was lifted September 28, 1973.

---

[17] The Declaration of Extraordinary Emergency was signed under the authority of the Act of July 2, 1962, and the Talmadge-Aiken Act of September 28, 1962. These laws permit the Secretary of Agriculture to declare an Extraordinary Emergency when it has been determined that adequate measures to control a disease are not being taken by the State involved. In this case, the action was taken in full agreement with the California Department of Food and Agriculture, following notification by California officials that a local court decision had invalidated their authority to carry out key components of the eradication program. Regulations under the Extraordinary Emergency powers provided Federal authority to place sentinel birds; to enter, with a warrant, premises to make necessary inspections; and to require the disposal of birds or other products affected with or exposed to exotic Newcastle disease. During the remainder of the eradication program, warrants under the Extraordinary Emergency were used twice to enforce placement of sentinel chickens in backyard flocks. Warrants were not needed to obtain compliance by commercial poultrymen. This was the first time an Extraordinary Emergency had ever been declared by USDA.

[18] To have stopped the sentinels, the poultrymen would have had to obtain an injunction or court order from a Federal court.

UNITED STATES DEPARTMENT OF AGRICULTURE
Superior Service Award

NEWCASTLE ERADICATION TASK FORCE
ANIMAL AND PLANT HEALTH INSPECTION SERVICE
RIVERSIDE, CALIFORNIA
FOR EXCELLENCE, CREATIVE LEADERSHIP, DEDICATION, AND PERSONAL SACRIFICE IN A JOINT USDA/STATE OF CALIFORNIA TEAM EFFORT TO ERADICATE EXOTIC NEWCASTLE DISEASE FROM CALIFORNIA AND PREVENT A NATIONAL DISASTER IN THE POULTRY INDUSTRY
MAY 1973
EARL L. BUTZ
SECRETARY OF AGRICULTURE

The Task Force received the Superior Service Award at USDA's Honor Awards Ceremony in Washington, D.C., in May 1973. This plaque is on display in the Emergency Programs Information Center (EPIC) in Hyattsville, Md.

TWELVE-MONTH SURVEILLANCE

Acting on the recommendations of the Scientific Advisory Group, the Task Force continued its 12-month surveillance to make sure the disease had been eradicated. This involved the continued use of the Epidemiological Necropsy Surveillance program (dead bird pickup), along with other surveillance procedures. In addition, the Task Force continued its disease prevention program (*see* p. 48 and Appendix G, p. 77).

ENS surveillance was continued in what had been high-risk areas, but was dropped from low-risk areas where it was evident that no infection existed. Biweekly pickup schedules through March and April, and monthly in May and June 1974, replaced weekly collections of dead birds. Calendars distributed to ranches informed the flock owners of the date for each future dead-bird pickup. Cooperation by the ranchers was almost 100 percent.

Throughout the 12-month surveillance, confidence in the achievement of eradication grew as the days passed without any new infection. Task Force numbers dwindled regularly until only two veterinarians were present to make disease investigations, answer the last telephone calls, and close out Task Force headquarters on July 3, 1974.

LIFTING OF EXTRAORDINARY EMERGENCY

On July 3, 1974, with the lifting of the Extraordinary Emergency by the Secretary of Agriculture, the biggest animal health emergency the United States had faced in more than 40 years came to an official—and successful—end.

A LOOK BACKWARD

In one sense, the story of the Task Force's fight against "the chicken disease in southern California" and the successful eradication of VVND can be told with statistics: 45,000 square miles quarantined; 11.9 million birds destroyed; $56 million in Federal funds, including $27.5 million in indemnities; 3,177 people; 579 vehicles driven almost 9 million miles; 8,366 disease investigations involving more than 77.5 million birds; nearly 113 million doses of vaccine applied; 110 dozen embryos used per day; and 22,548 ranch stops.

Bare figures, however, cannot convey the anguish of those poultrymen and backyard flock owners whose birds were destroyed; nor can such figures depict the sacrifices of the dedicated men and women of the Task Force who worked long and hard hours—often with no extra compensation—and who, in many cases, were separated from their families for weeks and months.

On the plus side, both flock owners and the Task Force were able to profit from the experience. Commercial egg ranches continuing in production learned new management techniques that might well improve their economic position in future years. Lessons learned by the Task Force provided USDA's APHIS officials valuable insight into eradication techniques and methods that could be applied against any foreign animal or poultry disease that might invade this country in the future.

Several achievements of this eradication campaign are deserving of special notice. This was the first time any country has been successful in eradicating exotic Newcastle disease after it had come so close to being endemic to an area. The Task Force demonstrated that a number of different agencies can join forces and work cooperatively to eradicate an animal disease in a relatively short length of time. In addition, a large force of temporary workers—with no experience in animal disease programs and little or no knowledge of the poultry and bird industries—was trained and molded into an effective working group.

Two techniques were tested and found to be excellent means of monitoring the disease situation in large areas. The Task Force proved that a large-scale sentinel bird program can be carried out effectively with adequate biological security. The ENS program demonstrated that producers are willing to participate in this kind of program. It further showed that examination of dead birds was almost 100 percent effective in detecting the virus if it was present in a flock. The implications of these two techniques for future programs is enormous.

The campaign proved that the concept of having a core of persons highly trained in the techniques of handling emergency disease outbreaks is a viable method of handling such outbreaks. And finally, it established again that without the cooperation of the affected industry, the eradication program would not have succeeded.

Table 5 summarizes the activities of the eradication campaign. Figure 10 shows this same information in graphic form on a percentage basis.

Table 5.—Infected and exposed flocks, by type of bird

Type of birds	*Infected*		*Exposed*		*Total destroyed*	
	Flocks	*Birds*	*Flocks*	*Birds*	*Flocks*	*Birds*
Commercial layers	134	10,131,682	25	676,379	159	10,808,061
Pullets and broilers	14	500,933	6	263,890	20	764,823
Commercial turkeys	5	122,580	-	-	5	122,580
Commercial breeders . . .	2	112,778	-	-	2	112,778
Exotic birds	28	15,902	61	2,223	89	18,125
Pigeons	9	1,234	19	545	28	1,779
Game birds	7	9,573	6	17,497	13	27,070
Backyard and aviaries . .	201	14,332	824	19,950	1,025	34,282
Total all classes	400	10,909,014	941	980,484	1,341	11,889,498

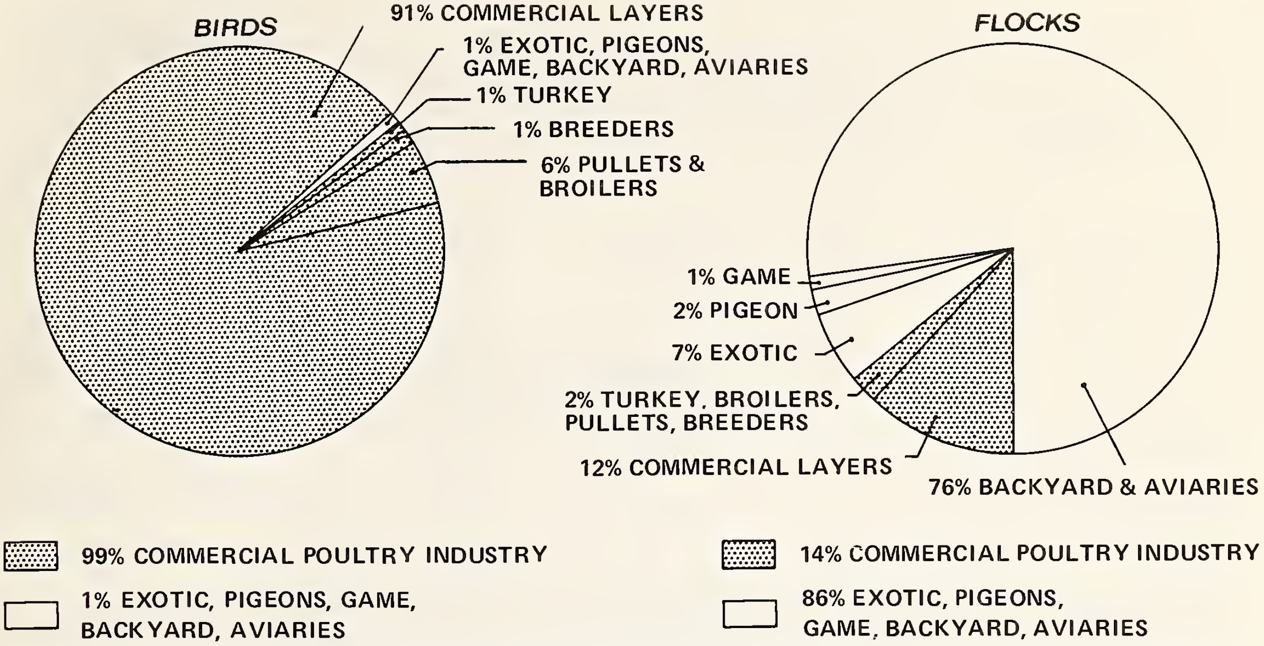


Figure 10.—Percent by class of flocks and birds depopulated during the VVND eradication program in Southern California from November 26, 1971 to June 28, 1973.

LITERATURE CITED

1. Bram, R. A., Wilson, S. W., and Sardesat, J. B.
   1974. Fly control in support of the exotic Newcastle disease eradication program in southern California. Bul. Entom. Soc. of America 20(3): 228-230.
2. McDaniel, H. A., and Orsborn, John S.
   1973. Diagnosis of velogenic viscerotropic Newcastle disease. Jour. Amer. Vet. Med. Assoc. 163(9): 1075-1079.
3. Omohundro, R. E.
   1972. Exotic Newcastle disease eradication. Proc. 76th Ann. Meeting U.S. Animal Health Assoc. pp. 264-268.
4. Sharman, E. C., and Lamont, J. D.
   1974. The VVND eradication program in southern California. *In* 15th World Poultry Congress (SF 6—Pathology), pp. k43-420.
5. __________ , and Walker, John W.
   1973. Regulatory aspects of velogenic viscerotropic Newcastle disease. Jour. Amer. Vet. Med. Assoc. 163(9): 1089-1093.
6. Utterback, William
   1973. Epidemiology of VVND in southern California. Proc. 76th Ann. Meeting U.S. Animal Health Assoc., pp. 280-287.
7. __________ , and Schwartz, Jerome H.
   1973. Epizootiology of Velogenic Viscerotropic Newcastle disease in southern California, 1971-1973. Jour. Amer. Vet. Med. Assoc. 196(9): 10-1088.

APPENDIX A: PERSONNEL DATA ON CALIFORNIA NEWCASTLE TASK FORCE—MARCH 14, 1972 - JUNE 30, 1974

Organization	*Personnel*[1]	*Salary cost*	*Days assigned*	*Per diem cost*[2]	*Travel cost*[3]
	Number	*Dollars*	*Number*	*Dollars*	*Dollars*
State of California	73	$1,168,377.84	19,592	$489,800.00	$7,300.00
USDA - APHIS-VS	262	2,009,637.68	33,836	845,900.00	52,400.00
Dept. of Defense	403	441,945.02	19,246	481,150.00	80,600.00
USDA-Forest Service	19	51,238.88	1,572	39,300.00	3,800.00
USDA-APHIS-PPQ	58	248,695.76	5,293	132,325.00	11,600.00
Temporary	2,287	4,604,210.13	179,772	([4])	([4])
Total	3,102	8,524,105.31	259,311	1,988,475.00	155,700.00

---

[1] Does not include 75 miscellaneous personnel.
[2] $25 per day.
[3] Average $200 round trip—Federal; average $100 round trip—State.
[4] None.

APPENDIX B: PROGRAM STANDARDS FOR THE ERADICATION OF EXOTIC NEWCASTLE DISEASE

VETERINARY SERVICES POLICY AND PROGRAM STANDARDS FOR THE ERADICATION OF EXOTIC (VISCEROTROPIC, VELOGENIC) NEWCASTLE DISEASE[1]

(1) **Diagnosis**

(Diagnosis need not be restricted to laboratory confirmation).

History (should include):

a. Possible exposure from outside through people, equipment, vehicles, animals, poultry or other avian species.
b. Confirmed or suspected cases of exotic Newcastle disease in area.

Clinical Signs (may include):

a. Sudden appearance.
b. Respiratory distress early in outbreak expressed by coughing and gasping. The severity varies greatly between outbreaks.
c. Nervous involvement.
d. Swelling about the head.
e. Drop in feed consumption.
f. In laying hens, egg production may drop to a low level or to zero.
g. High mortality, particularly in nonvaccinated birds.
h. Eggshells may be soft and distorted. Internal egg quality may also be affected.

---

[1] Issued March 16, 1972, as Emergency Programs 725.1.

Gross Pathology (usually noted):

a. Hemorrhages on the proventricular submucosa and on lymphoid areas of the intestines. Hemorrhages may also appear on the gizzard.
b. Cloudiness of the air sacs with yellowish exudate.

Laboratory Findings:

a. Embryo death in 24-48 hours.[2]
b. Amniotic fluid HA positive.[2]
c. Amniotic fluid neutralized by specific Newcastle disease immune serum.[2]
d. Produces viscerotropic lesions in susceptible birds 8 weeks or older.[3]
e. Produces red plaques on chick embryo fibroblast cell cultures.[3]

(2) **Handling of Infected and Exposed Flocks**

a. Infected premises

Each infected flock shall be placed under State premises quarantine or hold order. After depopulation, infected or exposed premises shall remain vacant of all poultry for not less than 30 days after cleaning and disinfecting has been completed. All infected and exposed flocks will be slaughtered or in instances that are mutually acceptable to the co-directors, if little or no opportunity for spread exists, the flock may be held in isolation under State quarantine for slaughtering at a later date. After slaughter of the infected flock, the premises shall remain vacant of all poultry for 30 days or susceptible sentinel chickens placed in the houses to determine if exotic Newcastle disease virus is present on the premises.

b. Appraisal

Appraisal shall be based upon live birds affected with or exposed to exotic Newcastle disease. Indemnities are to be based on an appraisal of such birds at their actual value for meat, egg production, or breeding at place and time of appraisal.

A census of all live poultry on the premises at the time of the first investigation by a State or Federal veterinarian may constitute basis for appraisal for indemnity.

c. Destruction

Destruction of infected and/or exposed birds should be done in a humane manner and designed to prevent spread of Newcastle disease.

Suggested Techniques:

1. Carbon Monoxide from automobile exhaust in sealed house.
2. Carbon monoxide from automobile into a hood-like construction covered with polyethylene.
3. Carbon Dioxide—place birds into crates covered with polyethylene and introduce CO_2 from cylinder.
4. Other effective humane techniques

d. Disposal of Carcasses

Carcasses of poultry that have died from exotic Newcastle disease or have been euthanized because of the disease should be disposed of in a manner which will preclude the spread of infection to other flocks. This may be by burial according to Part II—Disposal, of the "Emergency Animal Disease Eradication Guide." Such carcasses may be transported in leak-proof, tightly covered vehicles to a rendering plant for disposal.

---

[2] These tests should be conducted at a local poultry disease diagnostic laboratory.

[3] With Animal Health concurrence, these tests should be conducted by Dr. R. P. Hanson, University of Wisconsin, Madison Wisconsin, for confirmation purposes.

e. Cleaning and Disinfection

Cleaning and disinfection should be carried out as described in Part I—Cleaning and Disinfection (C&D), "Emergency Animal Disease Eradication Guide." Disinfectants to be used are Cresylic disinfectant, 4 percent, 4 ounces to 1 gallon water, or Sodium Orthophenylphenate, 1 pound to 12 gallons of water applied at temperature 60° F or above.

(3) **Approved Vaccination Programs**[4]

a. **Nationwide Plan—For Low Risk Areas**[5]
(Individual bird treatment is method of choice.)

Chickens:

1-10 days old (optional)—B_1 Hitchner or B_1 type La Sota
4-5 weeks old—B_1 type La Sota
12 weeks old—B_1 type La Sota
Revaccinate every 2-4 months with B_1 type La Sota

Turkeys:

1-10 days old—B_1 type La Sota
6-8 weeks old—B_1 type La Sota
After selection, breeding birds should be revaccinated with B_1 type La Sota. Revaccinate turkeys if force molted.

b. **High Risk**[6] **(Quarantine) Areas Plan**[5]
(Individual bird treatment is method of choice.)

Chickens:

1-10 days old—B_1 Hitchner or B_1 type La Sota
4-5 weeks old—B_1 type La Sota
12 weeks old—B_1 type La Sota
Revaccination every 2 months with B_1 type La Sota

Turkeys:

1-10 years old—B_1 type La Sota
6-8 weeks old—Tissue Culture Strain or Roakin Strain
After selection, breeding birds should be revaccinated with Tissue Culture Strain or Roakin Strain. Revaccinate turkeys, if force molted.

c. **Optional Plan for California High Risk**[6] **(Quarantine) Areas**[5]
(Individual bird treatment is method of choice.)

---

[4] These programs were recommended to Veterinary Services, Animal and Plant Health Inspection Service (APHIS) by a scientific group consisting of B. S. Pomeroy, Chairman, R. P. Hanson, R. A. Bankowski, S. B. Hitchner, H. Goldstein, L. Grumbles, and F. R. Craig.

[5] The vaccine manufacturer's instructions should be followed regarding application.

[6] High risk area is an area under quarantine or immediately adjacent to a quarantine area.

Chickens:

1-10 days old—B_1 Hitchner or B_1 type La Sota
5-6 weeks old—Tissue Culture Strain or Roakin Strain
14-18 weeks old—Tissue Culture Strain or Roakin Strain
Birds carried over into a second production period should be revaccinated with Tissue Culture Strain or Roakin Strain.

Turkeys:

Same as chickens

d. **Flock Vaccination**—The County Supervisor will arrange with Survey and Vaccination Staff to secure vaccination crews for use in his assigned area. There shall be official supervision of approved Newcastle disease vaccination and revaccination programs in quarantine areas and other high risk areas.

On the recommendation of the Veterinarians in Charge and the appropriate State officials, Veterinary Services will consider giving approval for the use of Department funds toward the cost of vaccine and vaccine administration. This procedure applies to flocks in high risk areas provided an approved vaccination program (Item (3)) followed, vaccine administration is under the supervision of a State or Federal inspector, and an individual bird method of application is used. Ten pre-vaccination blood samples shall be drawn from each flock; ten samples shall be drawn two weeks post vaccination for HI testing. Flocks not showing a uniform increase of mean flock titer or showing a rise of less than two logs shall be revaccinated.

(4) Area Quarantine—The County Supervisor is responsible for all flock inspection and issuing permits for his assigned area.

a. Selecting Area for Quarantine.

An area quarantine shall be established around infected premises and should include appropriate adjacent premises. The area quarantine shall be maintained so as to limit the spread and lead to eventual eradication of the virus of exotic Newcastle disease.

b. Monitoring Quarantine Area.

Inspection of flocks in the quarantine area shall be carried out according to each flock's location and relation to infected premises.

1. Zone 1, All flocks within 1/4 mile of an infected premise and all flocks associated with the infected premises by movement of people or fomites. Inspect every other day for 10 days.
2. Zone 2, Flocks within 2 miles of infected premises. Inspect weekly for 2 or 3 months.

c. Movement of Poultry Within Quarantine Area.

All intra-quarantine movement of poultry prohibited except as provided:

1. Poultry may move to slaughter if inspected by a State or Federal inspector not more than 5 days prior to movement and a permit is issued by the inspector.
2. Poultry may be moved for further production if the poultry has been subjected to an approved vaccination program at least 10 days prior to movement, the poultry is inspected within 48 hours prior to movement, and a permit is issued by the inspector.

d. Removal of Area Quarantine.

The area quarantine shall be in effect not less than 90 days following the last known outbreak in the area. This also applies to area quarantine that contains only infected or exposed flocks which have undergone depopulation as provided in (2) a.

(5) Movement of Product In and Out of the Area Quarantine and Disposition of Product

a. Table Eggs.

1. **Infected flocks**—Destroyed by burying, rendering, or other suitable methods. No movement outside area quarantine.
2. **Exposed flocks**—Withheld from the market until a determination is made on whether the flock is infected. If the flock is destroyed before a determination is made, the eggs shall also be destroyed. No movement outside area quarantine.
3. **Noninfected-nonexposed flocks**—Allowed free movement in trade channels within or out of quarantine area provided they are moved from the farm to distribution centers or retail outlets in only new cases, liners, and boxes. All such eggs shall be washed and sanitized and moved in only new containers when leaving the quarantine area.

b. Eggs for Hatching and Unfed Poultry.

1. **Infected flocks**—Destroyed by burying, rendering, or other suitable methods. No movement outside area quarantine.
2. **Exposed flocks**—Destroyed or movement may be withheld until a determination is made on the flock status. No movement outside area quarantine.
3. **Noninfected-nonexposed flocks**—Movement limited to within the quarantine area and not permitted outside the quarantine area except that consideration may be given on a case-by-case basis to allow unfed poultry from an approved flock to move out of the quarantine area intrastate, but not interstate.

c. Poultry Other than Unfed Poultry.

1. **Infected flocks**—No movement from area quarantine.
2. **Exposed flocks**—May move to a slaughter plant in quarantine area under USDA State inspection provided they are moved in a way that there is no scattering of feathers, manure, or other methods of virus spread. No movement outside area quarantine.
3. **Noninfected-nonexposed flocks**—May move to USDA State slaughter plant within the quarantine area or may move to slaughter at USDA State inspected plant outside the area under permit from a State or Federal inspector. Such birds must be inspected within 24 hours prior to movement out of the quarantine area.

d. Eggs for Hatching and Unfed Poultry Entering Quarantine Area.

These products may enter a quarantine area only when they originate from an "Approved Flock."

(6) Vehicles—Cleaning and disinfection staff will arrange for C&D of trucks used hauling birds to slaughter, rendering trucks, garbage trucks, and manure trucks. All vehicles used in transporting poultry to slaughter or transporting started pullets or other age poultry to another location for further production shall be cleaned and disinfected under supervision using approved procedures and permitted disinfectant.

(7) Approved Flock

A noninfected-nonexposed poultry flock which is under the supervision of an accredited veterinarian, inspected weekly by salaried State or Federal veterinarians and has been vaccinated or revaccinated at least one time under an approved vaccination program.

(8) Disease Investigations

All infected, exposed, and suspicious flocks shall be investigated by a veterinary poultry epidemiologist to determine source and means of spread.

(9) Pet Birds and Bird Shows

a. Pet Birds may not be moved out of the area quarantine.
b. Pet bird importers, distributors, and retail pet shops should be monitored for evidence of exotic Newcastle disease and for adequacy of holding areas and cages to preclude the birds from escaping.
c. Bird shows shall be prohibited within the area quarantine.

(10) Game Chickens

Vaccination clinical service shall be provided in the quarantine area through practicing veterinarians and the local extension service office. The Department shall provide the vaccine and pay for administration.

CALIFORNIA DEPARTMENT OF AGRICULTURE
DIVISION OF ANIMAL INDUSTRY
BUREAU OF ANIMAL HEALTH

ASIATIC NEWCASTLE DISEASE QUARANTINE REGULATIONS[7]

Section 800, 800.1, Title 3, California Administrative Code.

800. **Asiatic Newcastle Disease**

The Director in concurrence with the United States Secretary of Agriculture finds that a velogenic vicerotropic strain of Asiatic Newcastle, an exotic, highly fatal disease of poultry, exists in California and is detrimental to the poultry industry and other avian species.

In quarantined areas:

(a) **Restrictions.** All avian species shall be closely confined upon the premises in such a manner as may be required by the Department. *Diagnostic tests, including the maintenance of sentinel birds, may be required to determine the disease status of a flock.*

(b) **Vaccination.** Upon notification to the owner or person in possession of poultry or other avian species, the Director may require vaccination or revaccination with such vaccine as he determines necessary or advisable.

(c) **Movement.** No birds or products of birds, including equipment, containers and vehicles that come in contact with birds or bird products, may move within or out of the quarantine area except under permit. Inspection by a State or Federal inspector may be required before a permit is issued.

---

[7] Adopted December 13, 1971; amended (italics) August 9, 1972.

(d) **Destruction.** The Director may require any bird in the quarantine area infected with, exposed to, or liable to have been exposed to Asiatic Newcastle to be destroyed and the carcasses disposed of under the supervision of a State or Federal inspector.

(e) **Cleaning and Disinfection.** When birds are destroyed, as provided by this section, the Director may require the premises to be cleaned and disinfected in a manner satisfactory to the Director and the premises thereafter tested for freedom from disease before other birds are permitted upon the premises, as designated by the Director.

800.1 Asiatic Newcastle Disease Quarantine Areas

None as of November, 1973.

APPENDIX C: SUMMARY OF THE FIRST, SECOND, AND THIRD ROUND VACCINATION IN EIGHT-COUNTY QUARANTINE AREA (45,000 mi^2) APRIL 1 TO MAY 31, 1972, JUNE 1 TO JULY 31, 1972, AND AUG. 1 TO SEPT. 30, 1972.

First Round—Apr. 1 to May 31, 1972

County	*Commercial operations*						*Backyard operations*	
	Egg layers[1]		*Turkeys*		*Broilers*		*Flocks*	*Birds*
	Flocks	*Birds*	*Flocks*	*Birds*	*Flocks*	*Birds*		
Imperial	- - -	- - -	1	1,000	1	1,000	1,960	45,000
Los Angeles.	58	1,234,000	26	303,000	38	976,000	7,397	304,000
Orange	71	1,908,000	- -	- - -	1	3,000	1,944	99,000
Riverside	355	13,486,000	17	163,000	34	4,000	5,147	130,000
San Bernardino . .	264	9,706,000	47	485,000	13	333,000	4,546	164,000
San Diego	207	10.957.000	4	23,000	- -	- - -	5,539	149,000
Santa Barbara . . .	10	376,000	- -	- - -	- -	- - -	1,658	46,000
Ventura	14	3,330,000	1	13.000	- -	- - -	1,770	52,000
TOTAL	979	41,000,000	96	987,000	87	1,316,000	29,961	989,000

Second Round—June 1 to July 31, 1972

Imperial	- - -	- - -	- -	- - -	- -	- - -	1,073	29,000
Los Angeles	37	188.000	23	331.000	54	913,000	- - -	- - -
Orange	28	687,000	- -	- - -	- -	- - -	2,609	45,000
Riverside	403	12,932,000	24	291,000	- -	- - -	4.178	99,000
San Bernardino . .	210	7,378,000	48	844,000	24	574,000	5,321	125,000
San Diego	224	12,404,000	1	11,000	- -	- - -	4,778	107,000
Santa Barbara . . .	6	325,000	1	18.000	- -	- - -	843	27.000
Ventura	13	715.000	- -	- - -	- -	- - -	1,715	41,000
TOTAL	921	34,629,000	97	1,495,000	78	1,487,000	31,497	743,000

APPENDIX C—Continued

Third Round—Aug. 1 to Sept. 30, 1972

Imperial	---	---	--	---	--	---	---	---
Los Angeles	5	16,000	--	---	--	---	---	---
Orange	10	207,000	--	---	--	---	---	---
Riverside	73	4,144,000	24	246,000	7	154,000	---	---
San Bernardino	132	3,062,000	8	192,000	2	8,000	---	---
San Diego	95	3,401,000	1	5,000	--	---	---	---
Santa Barbara	---	---	--	---	--	---	---	---
Ventura	1	5,000	--	---	--	---	---	---
TOTAL	296	10,835,000	33	443,000	9	162,000	0	0

---

[1] Mobile unit flocks, 57; birds, 1,210,000.

APPENDIX D: STANDARD DEAD BIRD PICKUP PROCEDURES IN THE ENS PROGRAM

In the Epidemiological Necropsy Surveillance (ENS) program, standard dead bird pickups were established. The following are presentations of these procedures.

Records of first- and second-round vaccinations were used to establish approximate bird inventories and the percentage to be sampled determined. With this information, collection routes were formed. To determine the number of birds required from each flock, the following guide was used:

Size of flock	*Minimum birds needed*
Under 5,000	All fresh dead (minimum of 8 per month)
5,000 to 20,000	4 birds per submission
20,000 to 50,000	6 birds per submission
50,000 to 100,000	15 birds per submission
Over 100,000	30 birds per submission with a minimum of 2 birds per house or unit

The first regularly organized dead bird pickups were made on a trial basis. Most of southern California's poultry industry was located away from the coastline in desert and semi-desert areas where summer temperatures exceed 100° F on many days between June and October. Field trials were undertaken to establish procedures which would ensure delivery of dead birds to collection stations with least spoilage.

After the adoption of an ENS standard procedure, the pickup of dead birds became routine. To provide a means to transport the dead birds, discarded household freezer units were mounted in the rear of pickup trucks. Icepacks were placed in the freezer box each morning before start of the ENS route. Routes were organized so that first stops were made not earlier than 9 a.m., because few ranchers were prepared to have dead birds in the containers before that time. Each poultryman was instructed to submit birds found dead the morning of a scheduled pickup day and was requested to place them in the cans no sooner than 1 hour before the scheduled collection time.

The driver stopped his truck at the ranch entrance, put on freshly laundered coveralls, put on short rubber boots and disinfected them, and pulled on a pair of disposable plastic gloves. He then took a plastic bag measuring 30 inches wide, 37 inches deep, and 5 mm thick to the dead bird container. This bag was the most commonly used, but larger 57-inch-deep bags were available for large numbers of birds.

The driver removed the bag of birds from the rancher's can and immediately placed that bag inside another one because double bagging lessened chances of cross-contamination. The bag of dead birds was then deposited in the freezer box which was kept cool with icepacks. It was possible to maintain 8° to 10° F cooler temperature inside the box than the outside air. In cool weather, fewer than 0.2 percent of submissions were discarded because of decomposition; whereas, in hot weather, 0.6 percent of submissions were discarded.

When the results of field trials were evaluated, garbage cans placed in the shade proved to be the best method for preserving dead birds. When fresh dead birds were placed in the cans in the cool of the morning, they would still be in satisfactory condition for laboratory diagnosis later in the day.

The Task Force purchased garbage cans from the General Services Administration. These heavy-gauge 30-gallon capacity steel cans 26 inches in diameter were identified by stencil painting as USDA property and as part of the ENS program before they were placed on ranches.

If natural shade were unavailable, artificial shade was provided by use of plywood shelters. These shelters consisted of 2-by-4 legs placed at each corner of a 4- by 4-foot piece of 1/2-inch plywood. The legs were long enough to provide not less than 6 inches of air space above the 26-inch-high garbage can. This distance was found to be quite critical in maintaining the lowest possible temperature in the cans during the hot part of the day. Another sheet of plywood was placed on the side of the shelter to shade the entire can. Because of its movability, the shelter could be changed during the day.

Some ranchers did not have dead birds on the scheduled collection day; they did contribute occasionally. Of all ranches, 98 percent participated at least once each month. Poultry ranchers who did not cooperate with the ENS program constituted less than 2 percent of the total flocks in the area. However, it was possible to sample their birds by making trachael and cloacal swabs when these ranches sent spent hens to processing plants. By using the combination of dead bird pickup and collection of samples at slaughter, a 100-percent surveillance of ranches was possible within the area covered by the ENS program.

Birds found dead on the morning of a scheduled pickup were placed in plastic bags and left in garbage cans at the ranch entrance by poultrymen.

Artificial shade for the cans was provided by plywood shelters.

After pickup, the dead birds were put in a freezer box kept cool with icepacks.

APPENDIX E: ENS SUMMARY OF ACTIVITIES—AUGUST 1972 TO JUNE 1974

Month and year	*Ranches on ENS*	*Interval*[1]	*Number of collections*	*Birds collected*	*Newcastle Disease virus isolated*	
					Non-VVND	*VVND*
1972						
August	5[2]	I	15[2]	190[2]	3	1
September	6[2]	I	20[2]	225[2]	3	1
October	15[2]	W	57[2]	1,140[2]	4	1
November	250	W	278	3,014	67	1
December	344	W	1,051	4,452	58	1
1973						
January	409	W	1,389	5,690	51	7
February	416	W	1,521	5,707	53	1
March	431	W	1,760	8,070	51	1
April	432	W	1,751	10,918	43	2
May	441	W	1,939	11,784	42	--
June	442	W	1,670	9,254	37	--
July	452	W	1,788	9,127	33	--
August	447	W	1,764	8,896	31	--
September	345	W	1,078	5,594	26	--
October	272	W	1,115	5,787	12	--
November	264	W	1,028	5,653	16	--
December	234	W	937	5,108	11	--
1974						
January	252	W	1,022	5,563	9	--
February	257	W	985	4,981	9	--
March	250	B	520	2,665	8	--
April	241	B	468	2,352	7	--
May	218	M	218	1,065	6	--
June	174	M	174	849	5	--
TOTALS			22,548	118,084	585	16

[1] I, irregularly; B, bimonthly; M, monthly; W, weekly.
[2] Estimates.

Flocks diagnosed positive, ENS program, by County:

Commercial flocks		Backyard flocks
Riverside	7	None
San Bernardino	8	
San Diego	1	
	16	

APPENDIX F: DISEASE PREVENTION PROGRAM

The following disease prevention practices should be applicable to most, if not all, viral diseases of poultry and can be implemented much earlier in similar future programs.

On the Poultry Farm

Equipment needed:

1. Disinfectant
2. Boot brush and bucket
3. Coveralls and rubber boots for visitors
4. Proportioner[1] and hose
5. Foot bath
6. Sign to stop traffic

Do's and Don'ts

1. *Do* enforce suggestions given to egg processors, feed companies, vaccination crews, and others entering your ranch.
2. *Do* provide equipment and supplies listed above.
3. *Do* take safety precautions yourself—you, too, can spread disease.
4. *Do not* allow unnecessary visitors.
5. *Do not* allow equipment to be brought to your ranch that has not been or cannot be disinfected.
6. *Do not* use vaccine that has been on another ranch.

Tips on Birds and Diseases

1. Day-old unfed chicks from approved hatcheries are essentially disease-free.
2. If you buy started pullets, know the source and buy from only one source.
3. Use an all-in, all-out operation where possible.
4. Do not buy spent hens unless this is your total operation.

Vaccination Crews and Service Personnel

Equipment needed:

1. Coveralls (long sleeves preferred)
2. Rubber boots (high enough to tuck coverall legs in)
3. Disposable head wear
4. Bucket and brush
5. Disinfectant
6. Plastic sacks

Procedures for entering a poultry premise:

1. Park car outside the premise.
2. Dress in clean coveralls.
3. Put on boots.

---

[1] A small inexpensive unit for attachment to a regular water faucet to which a garden hose could then be attached. The proportioner would meter into the stream of water the correct amount of disinfectant required.

4. Put on disposable caps.
5. Disinfect boots.
6. Carry on ranch only articles that can be cleaned and disinfected.
7. Carry lunches in clear plastic bag and leave bag on premises.
8. Carry vaccine in clean plastic bag and leave any unused vaccine on ranch.
9. Dress for the job at your car. Do not plan to remove clothing on the ranch.

Procedures for leaving a poultry premise:

1. Leave all articles that can't be cleaned and disinfected on the ranch.
2. Clean and disinfect boots inside and out.
3. Clean and disinfect other articles and place them in a clean plastic bag.
4. Take off coveralls and other washable items and place in a plastic bag for washing.
5. Wash hands, fingernails, and arms in disinfectant. After you arrive at home, take a shower and wash hair. By implementing these procedures, you will be protecting your industry from the spread of all disease and thus help make a healthier, more prosperous industry.

Poultry Moving Crews

Equipment needed:

1. Workable proportioner for disinfectant
2. Coveralls (long sleeves preferred)
3. Rubber boots (high enough to tuck coverall leg in)
4. Bucket and brush
5. Disinfectant
6. Plastic bags for dirty coveralls and disposable items
7. Disposable caps

Moving poultry from a ranch:

1. Park car outside of premises.
2. Dress in clean coveralls at your car. Do not plan to remove any clothing on premises.
3. Wear rubber boots and disinfect them.
4. Wear disposable cap.
5. Bring only articles on premises that can be cleaned and disinfected.
6. Carry lunches in clean plastic bags and leave bag on premises.
7. Clean and disinfect all poultry moving equipment.

Leaving ranch from which birds are moved:

1. Clean and disinfect boots.
2. No other precautions necessary if you are unloading the same birds on another ranch.

Leaving premises where birds are moved to:

1. Clean and disinfect all poultry moving equipment.
2. Clean and disinfect boots.
3. Dispose of cap in plastic bag.
4. Place dirty coveralls in plastic bag for washing.
5. Clean and disinfect articles to be moved from premises.
6. Do not enter another premises unless you wear clean coveralls.
7. Disinfect hands, arms, and fingernails. Always shower after day's work.

Egg Truck Routes

1. Clean and disinfect egg flats, racks, and other equipment before returning to ranches.
2. Clean and disinfect interior of all vehicles at end of work day.
3. Clean and disinfect all vehicles upon entering and leaving a ranch.
4. Clean and disinfect footwear on entering and before leaving a ranch.
5. Wash hands.
6. Stay out of the poultry facilities.

Delivery of Feed

At the feed mill:

1. Clean and disinfect exterior of trucks, tires, undercarriage, runningboards, and floorboards of cab before leaving for each delivery.
2. Clean and disinfect rubber boots before entering truck cab.

At the ranch:

1. Wear rubber boots and clean and disinfect boots on arrival at each ranch and before leaving.
2. Wear freshly laundered coveralls each day and change whenever soiled.
3. Clean and disinfect tires and undercarriage of trucks before leaving ranch.
4. Clean and disinfect any equipment used on a ranch.
5. Keep hands out of feed.
6. Stay out of poultry facility.
7. Leave feed tickets at the feed storage facility.

APPENDIX G: INFECTION FOUND IN ARIZONA

Following a report of sickness among some game chickens on a small farm near Parker, Ariz., on the Colorado River Indian Reservation, the Task Force extended its activities into Arizona. These chickens had symptoms suspicious of Newcastle. Units were set up at Yuma and in Blythe on the border between California and Arizona to coordinate Task Force activities. Precautionary vaccination of backyard flocks on the reservation began on April 8, 1972. Above 3,000 birds in 130 flocks were vaccinated.

A week later, on April 14, exotic Newcastle disease was confirmed in the laboratory, and State and Federal quarantines were placed on most of Yuma and Mohave Counties in Arizona. The infected birds were destroyed and an active investigation was begun to locate the source of infection.

On May 18, a second isolated outbreak occurred in Arizona in a flock of some 700 birds, including chickens, near Kingman, Mohave County. Most of this county, including the area around Kingman, had been under quarantine since the earlier outbreak on April 14. A Task Force office was set up in Kingman and a vaccination program organized. Two rounds of vaccination were carried out on 25,000 birds in 2,000 backyard flocks in both Yuma and Mohave Counties. No commercial flocks were located in these counties.

No connection could be found between either of these two outbreaks and the exotic Newcastle infection in southern California. The cases also were unrelated to each other—one apparently resulted from movement of infected fighting game birds; the other, apparently from fancy chickens purchased from an exotic bird importer. Since the owner of the second infected flock conducted considerable trading and conducted a custom hatching operation, extensive tracing of sales were carried out.

In all, 41 infected and exposed flocks containing 2,300 birds were destroyed in Arizona. No further spread of the disease was recorded in the State. On July 28, 1972, area quarantines were reduced leaving restrictions only on the Colorado River Indian Reservation near Parker, Yuma County, and on the Sacramento Valley west of Kingman in Mohave County. The remaining quarantines were lifted from Yuma County on August 18, and from Mohave County on August 29, 1972.

APPENDIX H: DATA ON WILD BIRDS

Free-Flying Indigenous Wild Birds

Species	*Total collected*	*Results/no. tested*			
		Hi tests		*Virus isolations*	
		No. positive[1]	*Reciprocal dilution range*[2]	*VVND*[1]	*ND (other than VVND)*
Canada goose *Branta canadensis*	39	0/0	----	0/39	0/39
white-fronted goose *Anser albifrons*	2	0/0	----	0/2	0/2
snow goose *Chen hyperborea*	215	0/0	----	0/215	0/215
Ross' goose *Chen rossii*	5	0/0	----	0/5	0/5
pintail *Anas acuta*	1943	0/3	----	0/1943	5/1943
gadwall *Anas strepera*	11	0/0	----	0/11	0/11
American widgeon *Mareca americana*	53	0/1	----	0/53	0/53
shoveler *Spatula clypeata*	140	0/3	----	0/140	0/140
blue-winged teal *Anas discors*	32	0/0	----	0/32	0/32
cinnamon teal *Anas cyanoptera*	456	0/26	----	0/456	4/456
green-winged teal *Anas carolinensis*	436	0/0	----	0/436	4/436
redhead *Aythya americana*	15	0/0	----	0/15	0/15
canvasback *Aythya valisineria*	5	0/5	----	0/5	0/5
ring-necked *Aythya collaris*	15	0/0	----	0/15	0/15
lesser scaup *Aythya affinis*	7	0/0	----	0/7	1/7
common goldeneye *Bucephala clangula*	4	0/0	----	0/4	0/4
bufflehead *Bucephala albeola*	1	0/0	----	0/1	0/1
ruddy duck *Oxyura jamaicensis*	204	0/13	----	0/204	0/204
common merganser *Mergus merganser*	2	0/0	----	0/2	0/2
coot *Fulico americana*	59	0/6	----	0/59	0/59

Free-Flying Indigenous Wild Birds (Con.)

Species	*Total collected*	*Results/no. tested*			
		Hi tests		*Virus isolations*	
		No. *positive*[1]	*Reciprocal dilution range*[2]	*VVND*[1]	*ND (other than VVND)*
pigeon *Columba liva*	1198	1/819	----	0/1198	0/1198
mourning dove *Zenaidura macroura*	752	0/125	----	0/752	7/752
spotted dove *Streptopelia chinensis*	54	2/33	10-20	0/54	0/54
Say's phoebe *Sayornis saya*	13	0/2	----	0/13	0/13
raven *Corvus corax*	25	0/10	----	0/25	0/25
crow *Corvus brachyrhynchos*	472	0/149	----	1/472	2/472
starling *Sturnus vulgaris*	949	0/775	----	0/949	1/949
warbler (unidentified)	15	0/2	----	0/15	0/15
house sparrow *Passer domesticus*	1817	6/1505	10-160	3/1817	3/1817
Brewer's blackbird *Euphagus cyanocephalus*	195	0/160	----	0/195	0/195
cowbird *Molothrus ater*	11	0/11	----	0/11	0/11
house finch *Carpodacus mexicanus*	91	0/91	----	0/91	0/91
savannah sparrow *Passerculus sandwichensis*	*14*	0/13	----	0/14	0/14
Oregon junco *Junco oreganus*	69	0/3	----	0/69	0/69
white-crown sparrow *Zonotriehia leucophrys*	52	0/9	----	0/52	0/52
Miscellaneous[3]	75	0/32	----	0/75	0/75
TOTALS	9446	9/3796	----	4/9446	27/9446

[1] No. positive/No. tested.

[2] Based on 10 HA units.

[3] Includes: grebe-unidentified (1); brown pelican - *Pelecanus occidentalis* (2); cormorant - *Phalacrocorax penicillatus* (3); redtailed hawk - *Butco jamaicensis* (3); red-shouldered hawk - *Butco lineatus* (1); sparrow hawk - *Falco sparverius* (1); hawk - unidentified (12); California valley quail - *Lophortyx californieus* (2); ring-necked pheasant - *Phasianus colchicus* (4); snowy egret - *Leucophoyx thula* (1); great blue heron - *Ardea herodias* (1); common gallinule - *Gallinula chloropus* (1); killdeer - *Charadrius vociferus* (7); common murre - *Uria aalge* (1); white-winged dove - *Zenaida asiatica* (1); ground dove - *Columbigallina passerina* (3); roadrunner - *Geococcyx californianus* (3); great horned owl - *Bubo virginianus* (1); barn owl - *Tyto alba* (1); hummingbird - unidentified (2); swallow - unidentified (1); scrub jay - *Aphclocoma coerulescens* (3); wren - unidentified (1); mockingbird - *Mimus polyglottos* (2); robin - *Turdus migratorius* (1); western bluebird - *Sialia mexicana* (1); loggerhead shrike - *Lanius ludovicianus* (2); Audubon's warbler - *Dendroica auduboni* (2); western meadowlark - *Sturnella neglecta* (3); yellow-headed blackbird - *Xanthocephalus xanthocephalus* (3); red-winged blackbird - *Agelaius phoeniceus* (3); tanager - unidentified (2); pine siskin - *Spinus pinus* (1); lesser goldfinch - *Spinus psaltria* (1); brown towhee - *Pipilo fuscus* (5); sage sparrow - *Amphispiza belli* (8).

Free-Ranging and Captive Semi-Domestic Birds

Species	*Total collected*	*Results/no. tested*			
		Hi tests		*Virus isolations*	
		No. positive[1]	*Reciprocal dilution range*[2]	*VVND*[1]	*ND (other than VVND)*
goose unidentified	112	11/46	10-40	0/112	0/112
duck unidentified	1679	100/907	10-5120	9/1679	17/1679
California valley quail *Lophortyx californicus*	17	0/11	----	0/17	0/17
Gambel's quail *Lophortyx gambelii*	11	0/0	----	0/11	0/11
bobwhite quail *Colinus virginianus*	52	0/32	----	0/52	0/52
coturnix quail *Coturnix coturnix*	59	0/48	----	0/59	0/59
quail unidentified	292	1/19	10	1/292	7/292
chukar *Alectoris graeca*	234	12/127	10-40	2/234	8/234
ringnecked pheasant *Phasianus colchicus*	159	7/154	10-1280	0/159	2/159
pheasant unidentified	171	1/7	80	9/171	21/171
peafowl *Payo* sp.	65	1/45	80	3/65	2/65
guinea fowl *Numida* sp.	35	1/20	80	0/35	0/35
pigeon *Columba liva*	1276	30/511	10-80	8/1276	14/1276
spotted dove *Streptopelia chinensis*	17	0/15	----	0/17	0/17
ringed turtle dove *Streptopelia risoria*	47	0/22	----	0/47	0/47
white dove *Streptopelia* sp.	12	0/0	----	0/12	0/12
dove unidentified	98	8/16	10-80	1/98	1/98
Miscellaneous[3]	31	2/24	10-80	0/31	0/31
TOTALS	4367	174/2004		33/4367	72/4367

[1] No. positive/No. tested.

[2] Based on 10 HA units.

[3] Includes: Canada goose - *Branta canadensis* (6); scalded quail - *Callipepla squamata* (2); Benson quail - *Lophortyx douglassii* (1); mountain quail - *Oreortyx pictus* (3); California buff pheasant - *Phasianus colchicus* (7); white pheasant - *Phasianus colchicus* (5); melanistic mutant pheasant - *Phasianus colchicus tenebrosus* (2); wild chicken - *Gallus gallus* (1); mourning dove - *Zenaidura macroura* (4).

Exotic and Pet Birds

Species	Total collected	Results/no. tested			
		Hi tests		Virus isolations	
		No. positive[1]	Reciprocal dilution range[2]	VVND[1]	ND (other than VVND)
Chinese painted quail *Excalfactoria chinensis*	28	0/0	----	0/28	0/28
Lady amherst pheasant *Chrysolophus amherstiae*	30	0/10	----	0/30	0/30
cockatiel *Nymphicus hollandicus*	141	0/29	----	5/141	0/141
scarlet macaw *Ara macao*	12	0/0	----	1/12	0/12
half moon conure *Aratinga caniculoris*	28	0/2	----	1/28	0/28
Mexican double yellow head *Amazona ochrocephala oratrix*	5	0/2	----	1/5	0/5
yellow fronted Amazon *Amazona ochrocephala ochrocephala*	3	0/2	----	3/3	0/3
green cheeked Amazon *Amazona viridigenalis*	2	0/1	----	1/2	0/2
Finsch's Amazon parrot *Amazona finschi*	5	0/1	----	4/5	0/5
parrot unidentified	40	0/4	----	2/40	0/40
Indian ringneck parakeet *Psittacula Krameri*	5	0/5	----	1/5	0/5
bee bee parrot *Brotogeris jugularis*	9	0/6	-----	1/9	0/9
budgerigar *Melopsittacus undulatus*	1518	0/83	----	6/1518	6/1518
love bird unidentified	40	0/0	----	0/40	0/40
white cheeked turaco *Tauraco leucotis*	18	0/0	----	0/18	0/18
hummingbird unidentified	29	0/0	----	1/29	0/29
hoopoe *Upupa epops*	14	0/0	----	0/14	0/14
toucan unidentified	48	0/20	----	3/48	0/48
banded pitta *Pitta gaujana*	6	0/0	----	2/6	0/6
hooded pitta *Pitta sordida*	6	0/0	----	2/6	0/6
pitta unidentified	9	0/0	----	2/9	0/9

Exotic and Pet Birds (Con.)

Species	Total collected	Results/no. tested			
		Hi tests		Virus isolations	
		No. positive[1]	Reciprocal dilution range[2]	VVND[1]	ND (other than VVND)
leafbird *Chloropsis* sp.	14	0/0	----	0/14	0/14
fairy bluebird *Irena puella*	10	0/0	----	0/10	0/10
shama thrush *Copsychus malabaricus*	15	0/0	----	0/15	0/15
thrush unidentified	16	0/0	----	0/16	0/16
sunbird unidentified	26	0/0	----	0/26	0/26
orange breasted flower pecker *Dicaeum ignipectus*	30	0/0	----	0/30	0/30
flower pecker unidentified	13	0/0	----	1/13	1/13
white eyes *zosterops* sp.	22	0/	----	0/22	0/22
paradise wydah *Vidua paradisea*	10	0/0	----	0/10	0/10
fire finch *Lagonosticta senegala*	72	0/0	----	0/72	0/72
zebra finch *Poephila gouldiae*	17	0/0	----	0/17	0/17
lady gouldian finch *Poephila gouldiae*	18	0/0	----	0/18	0/18
cutthroat finch *Amadina fasciata*	18	0/0	----	0/18	0/18
finch unidentified	1011	0/1	----	1/1011	0/1011
canary *Serinus canarius*	182	0/5	----	0/182	0/182
red-crested cardinal *Paroaria coronata*	13	0/0	----	0/13	0/13
rainbow finch *Passerina leclancheri*	10	0/0	----	0/10	0/10
Miscellaneous[3]	447	9/60	10-80	0/447	0/447
TOTALS	3940	9/231	----	37/3940	6/3940

---

[1] No. positive/No. tested

[2] Based on 10 HA units.

[3] Includes: humboldt penguin - *Spheniscus humboldti* (1); ostrich - *Struthio camelus* (1); tinamou - unidentified (2); spoonbill - unidentified (1); blacknecked swan - *Cygnus melanocoriphus* (5); mandarin duck - *Aix galericulata* (1); humboldt francolin - *Francolin humboldtii* (2); francolin - *Francolinus* sp. (9); bush quail - *Coturnix c. africana* (1); barbary partridge - *Alectoris barbara* (2); Temminck's tragopan pheasant - *Tragopan temmincki* (1); white-crested kalij - *Lophura leucomelana* (1); kalij pheasant -

(Footnotes continued on p. 83)

Footnotes (continued)

Lophura sp. (2); silver pheasant - *Lophura nycthemera* (8); Swinhoe's pheasant - *Lophura swinhoii* (2); cheer pheasant - *Catreus wallichi* (3); green junglefowl - *Gallus sonnerati* (1); green pheasant - *Phasianus versicolor* (2); reeves pheasant - *Syrmaticus reevesi* (2); Hume's bar-tail pheasant - *Syrmaticus humiae* (2); golden pheasant - *Chrysolophus pictus* (5); Ghigi's golden pheasant - *Chrysolophus* sp. (4); Germain's peacock pheasant - *Polyplectron germaini* (3); Palawan peacock pheasant - *Polyplectron emphanum* (1); bartailed cuckoo dove - *Macropygia unchalla* (1); Senegal dove - *Streptopelia senegalensis* (7); South American scalley dove - *Scardafella squammata* (1); Australian crested dove - *Ocyphaps lophotes* (6); diamond dove - *Geophelia cuneata* (9); ornate lory - *Trichoglossus ornatus* (1); lori keet - unidentified (1); chattering lory - *Domicella garrula* (1); lory - unidentified (1); cockatoo - *Katatoe* sp. (3); macaw - unidentified (2); Patagonian conure - *Cyanoliseus patagonus* (1); conure - unidentified (6); yellow naped Amazon - *Amazona ochrocephala auropallia* (1); spectacled parrot - *Amazona albifrons* (2); mustache parakeet - *Psittacula alexandri* (1); red rosella parakeet - *Platycercus eximius* (1); blue rosella parakeet - *Platycercus adscitus* (1); rosella parakeet - *Platycercus* sp. (4); quaker parakeet - *Myiopsitta monachus* (1); peach-faced love bird - *Agapornis roseicollis* (4); blue masked love bird - *Agapornis personata* (1); Fischer's love bird - *Agapornis fischeri* (4); parrotlet - *Forpus* sp. (3); puffleg hummingbird - *Eriocnemis luciani* (1); bee hummingbird - *Mellisuga helenae* (1); Pavonine quetzal - *Pharomachrus pavoninus* (1); Indian roller - *Coracias benghalensis* (1); kingfisher - unidentified (6); sulphur breasted toucan - *Ramphastos sulphuratus* (1); Swainson's toucan - *Ramphastos swainsoni* (1); toucanet - unidentified (7); cock-of-the-rock - *Rupicola* sp. (2); cotinga - *Carpodectes hopkei* (9); shrike - unidentified (1); drongo - *Dicrurus* sp. (3); mynah - *Gracula religiosa* (7); spider hunters - unidentified (6); cowbird - unidentified (1); cordon bleu finch - *Uraeginthus bengalus* (4); blue-cap cordon bleu - *Uraeginthus cyanocophala* (4); yellow bellied waxbill - *Estrilda melanotis* (2); orange cheek waxbill - *Estrilda melpoda* (2); rosey rumped waxbill - *Estrilda rhodopyga* (6); red-eared waxbill - *Estrilda troglodytes* (1); St. Helena waxbill - *Estrilda astrild* (4); strawberry finch - *A. amandava* (6); gold breasted waxbill - *Amandava subflava* (6); silverbill finch - *Lonchura malabari* (3); rufous backed mannikan - *Lonchura bicolor* (3); society finch - *Lonchura striata* (7); spice finch - *Munia punctulata* (6); blackheaded nun - *Lonchura mallaca* (6); troupial - *Icterus icterus* (4); mountain tanager - *Tangara callophrys* (1); paradise tanager - *Tangara chilensis* (1); blue-necked tanager - *Tangara cyanicollis* (2); maroon tanager - *Ramphocelus carbo* (2); yellow rumped tanager - *Ramphocelus icteronotus* (2); tanager - unidentified (7); green singing finch - *Serinus mozambicus* (1); blackheaded siskin - *Spinus magellanicus* (3); European goldfinch - *Carduelis* sp. (1); Brazilian cardinal - *Paroaria capitata* (3); cardinal - unidentified (4); jacarin finch - *Volatinia jacarini* (1); saffron finch - *Sicalis flaveola* (9); crimson pileated finch - *Coryphospingus cristatus* (8); weaver - unidentified (5).

APPENDIX I: SENTINEL BIRD PLACEMENT SUMMARY

Area	*Backyard*		*Commercial*		*Total*	
	Flocks	*Birds*	*Flocks*	*Birds*	*Flocks*	*Birds*
Arizona (State)	39	206	NONE	NONE	39	206
Kern Co.	1	6	NONE	NONE	1	6
Los Angeles Co.	829	4,156	29	930	858	5,086
Orange Co.	67	334	39	1,388	106	1,722
Riverside Co.	1,809	5,450	179	11,038	1,260	16,492
San Bernardino Co.	509	2,779	198	8,399	707	11,178
San Diego Co.	NONE	NONE	4	103	4	103
Santa Barbara Co.	1	5	NONE	NONE	1	5
Ventura Co.	67	341	9	2,001	76	2,342
Grand Total	2,594	13,281	458	23,859	3,052	37,140

A total of 29 flocks were diagnosed positive with sentinel birds.

By County

Commercial	
Riverside	12
San Bernardino	10
Los Angeles	1
Ventura	3
	26

Backyard	
Riverside	2
San Bernardino	1
	3

*U.S. GOVERNMENT PRINTING OFFICE : 1978 0-720-304/3505

NATIONAL AGRICULTURAL LIBRARY
1022430215

NATIONAL AGRICULTURAL LIBRARY
1022430215

Task Force Criticism Ignites New Confusion

By JOHN F. YARBROUGH

Dr. Roland Winterfield of Purdue University must have put a good many poultrymen, to say nothing of numerous poultry scientists, in a state of shock last week.

Long recognized as an able scientist — and an outspoken one, too — Dr. Winterfield appears to have his heart set on ripping apart the program of the USDA Task Force which has been working at break-neck speed to first control and then eradicate velogenic, viscerotropic Newcastle disease (VVND).

As reported elsewhere in this newspaper, Winterfield told poultrymen at a joint Ohio-Indiana poultry meeting that "you can't eradicate the disease in Southern California." We don't have the scientific muscle to wrestle with the noted pathologist, but we must point out that a preponderance of the scientific people working on this problem in Southern California believe eradication is an achievable goal and one well worth the effort. Winterfield, we might add, bases his assumptions, at least in part, on a recent brief visit to Southern California.

The Purdue specialist believes the governme should have stayed out of the area and left Californ poultrymen to cope with the problem on their own Perhaps this is one of those cases where one's attitude depends upon

---

billion industry threatened

---

andling of New Epidemic Criticized

Egg Producers' Off

By MARTY CLAUS
Sun-Telegram Staff Writer

CUCAMONGA — U.S. Department of griculture officials may wish they'd ooken sooner to Ronald Rossiter.

Rossiter, president of Cooperative gg Producers of California — a poultry ndustry organization, is sputtering mad bout "the incredible damage that een done to th

so poultrymen can have access to fin cial help, small loans," he said. least give them a chance to fight bac

Rossiter also charged that goverment has ignored the effe scare can have on a major food ind

"The dumbbells back in should hav

U.S., California Join to Fight Chicken-Killing Epidemic

New York Times News Service

LOS ANGELES — A joint force that will soon number 1,300 is fighting an epidemic of the exotic Newcastle disease that threatens to bankrupt number of Southern poultry farm

massive vaccination program.

Dr. Gene H. Wommack the USDA, co-direc emerge

---

egg prices may skyrocket

how high prices will rise." Conway explained, "There will be a price hike, but we don't know d it will be in the next couple of weeks or not."

He said 13 per cent of the chickens in Southern California and 8 per cent in

the West go along because either an uneducated on Hein, a gg Producers Cucamonga

how many more birds will be killed," he said. that the

eggs from out of state," he said.

He added that even if they kill many more, his to import

but at this point there is no plan to do so.

"We do to move up pure point," he

react to it to be est."

But he is also about the entire situ There are limited

Poultry Flocks Quarantined in Southland

WASHINGTON (UPI)— The Agriculture Department, moving to halt a spreading poultry disease which can devastate unvaccinated flocks, disclosed Monday it has placed a quarantine on poultry and allied products in Southern Califor-

quarg the poultryand million million

order. t March movement poultry to under suAlso allows movement of poultry which eral inspec-

however, the prohibits the om the re- of live birds, uninspected carcasses and such equipment as coops and cages which might harbor the virus of exotic Newcastle disease.

The order was use of

Calif. Court Tells Butz to Appear

SACRAMENTO, Calif., Oct. 19 (UPI)—A superior court judge ordered Agriculture Earl Butz to appear ng next month to ex- he should not tes- a California legisla- ittee hearing on isease.

liam M. Gallagher etition Wednesday lyman John V. llerton) and set a earing for Nov

he had imes

on a controversial federal eradication program being used against Newcastle disease, a virus which has caused the destruction of millions of birds in Southern California.

Briggs' petition came two weeks after Butz brushed off an attempt by the state legislator to subpoena Butz for a hearing by the agriculture committee.

Briggs contends Newcastle can be controlled by a ion program rather the federal government method of destroying

---

USDA Says Sentinel Bird Program to be Continued in Newcastle Fight

U.S. Department of Agriculture officials say Southern California poultrymen can be assured that the "sentinel bird program" being used

of which are backyard flocks which have been completely depopulated of chickens and subsequently cleaned and disinfected.

ere has been a strik on in the number of disea throughout the quarantine R. E. Omohundro, the State-Federal Task Fo

---

Newcastle Quarantin Areas Are Reduced

SACRAMENTO — The Cali tment of Agri U. S. Depart reduc

tions of Kern, Kings, Tulare

Newcastle Disease Drive Is Gaining

Poultry checks on highways to be ended

Motorists on Southern California highways will no longer see "poultry quarantine" check points alongside truck weighing stations

Dr. E. C. Sharman, director State-Federal Exotic

Thursday, July 4, 1974

Newcastle disease finally eliminated

---

death sentence r millions of hens

gg City, a huge chicken ranch oorpark, Calif., is killing off some illion laying hens, its entire flock irds are infected with a ndent form of Newcastle and highly contagio ttacks the nervous, espiratory systems of ther birds. More than hens and pullets in C locks at 96 ranches, ha htered or are condemn oversial program is mana -federal Newcastle disea e, which is struggling to k lemic confined.

Washington has declared th on a national emergency. ans that poultry farmers ds are killed can be reimburs eir loss with federal money. gton has spent about $20.8-milli r, including $14.0 million in in ities, running fr rime hen to 42c luction peak.

Some Souther men, though, fe designed to he oversupply of about it. "We save the poul the country eral manag Producers.

'Depopulate' Birds To Quell Epidemic

Parrots, parakeets and myna birds are being "depopulated" along with chickens, turkeys and other commercial poultry in a continuing battle by agricultural officials to stop an epidemic of Exotic Newcastle virus disease in Southern California.

An estimated 2 million birds will have died or been exterminated by the time the government completes its disease

eradication campaign in counties which have a po tion of 35 million chicken turkeys.

Major poultry losses have been suffered by So ranchers, and the cost to the federal go for reimbursing owner minated flocks is $4 m

Although most bird destruction are poultry, Dr. J. H federal coordinato and federal disea task force, said also is being pe ported pet birds where infection

Dr. Womm ease is not h

Launch massive ca to eradicate fowl

By BILL STOCKTON
AP Science Writer

FONTANA, Calif. (AP) — A. T. and Helen Barnholder first inkling of their approaching disaster came at noon gusty Wednesday in December when several laying hens dropped dead in the cages.

Three days later a laboratory turned the verdict: exotic Newcastle disease, a virulent poultry virus, harmless to humans, with cold-like spreads

community 50 miles east of Los Angeles.

With the help of their 21-year-old son, and with tears streaming down Helen's face, the Barnholders methodically dragged each of their 10,600 chickens from the cages and broke their necks.

Federal veterinarians hoped the disease, apparently introduced by an exotic ed from

declared a national agri emergency, warning the seriously threatens the $5 billion poultry indus massive campaign unpre ed in the industry's histo been launched to eradic disease.

Gov. R

'Sentinel' Chickens Help Fight Spread of Invading Fowl Virus

By Dirk Werkman

FROM RIVERSIDE, CALIF.

battle line of "sentinel" chick- is standing guard against

spread to the ranch from an exotic-bird import store in the Fontana area. By Dec. 13, 1971, Exotic Newcastle had been confirmed in seven locations. Twenty-one other commercial and backyard chicken flocks had been exposed to it by that date.

Outbreaks occurred in poultry flocks quickly also in Texas, New Mexico, Arizona, and Florida. Isolated cases in pet birds and fighting cocks were detected in New York City, Chicago, Miami, and Denver. Now, however, the disease seems to have been stamped out everywhere except in California.

Quarantine Spreads

The Fontana area in California was placed in a quarantine that grew to 45,000 square miles when Earl Butz, Secretary of Agriculture, declared a state of emergency

---

Battle to Halt Poultry Infection

the three-pronged attack on the disease and its spread. The experts emphasized that the infection is not a human disease and that poultry meat and egg products are perfectly safe for consumers.

The disease is highly fatal to poultry and other birds, a force spokesman said.

lished headquarters in the eight counties to supervise a down-the-road vaccination and eradication program.

Trained investigators, including California Highway Patrol, will enforce a permit system of movement of poultry and birds in the eight counties with special check

points established at the Mexican border and California exit points to Arizona and Nevada.

rd flocks California be infected sease or ex- ase will be end of this nnounced to-

---

STREET JOURNAL, Monday, March 27, 1972

se Slowed by Extermination, ccine in California; Spread Still Feared

By G. CHRISTIAN HILL
porter of THE WALL STREET JOURNAL

IDE, Calif.—The spread of Asiatic disease through Southern California ks is slowing down, but scientists still a threat it may break out else-

s and becomes widespread, losses to industry could run as high as $500 retail prices for chicken, turkeys ould be sharply higher in the months istry observers say. So far, it hasn't ices for these items, they add.

atic strain, also called Exotic Newase, is a more virulent variety of a ailment. Asiatic Newcastle during 1970 and Amer-

properly applied, veterinarians estimate. If growers had been vaccinating their laying flocks all along, the current outbreak would have been much less serious, they add.

There's even more criticism about the government's decision to slaughter infected birds, and a number of poultry producers have formed a committee seeking review of the program. "This is the first eradication program of any size that I'm aware of in this industry," says Gary Bowen, president southwestern Egg Producers, a major co thinks the disease already is combatted effectively by

California growers outbreaks of the dise Mexico were contro slaughter. The gove flocks and prohibi until

---

Task Force Chief Reports Week Without Newcastle

Poultry Times Staff

RIVERSIDE, Calif. — The biggest news to come Newcastle disease task force headquarters here in some time, according to Dr. E.C. Sharman, director, la emergence of a solid week without an incidence of us.

eaks of the exotic disease ported for the seven day of Jan. 26 through Feb. 1, latest breaks coming on Feb. 2. This prolonged without a Newcastle k, according to officials, ents an encouraging sign force progression.

ROLLER-SKATING COCKATOO'S DEMISE IS A GASSER

than three million birds recently killed in California by a joint federal state task force to halt an epidemic of Newcastle disease. The bird's owner received two thousand dollars as a reimbursement. a task force bird app said But the unnamed who had app movies,

---

3.6 Million Fowl Killed in D To Halt a Deadly Avian Dis

By LAWRENCE K. ALTMAN

Federal and state health of California and Ari 3.6 million

tually paralysis sets occurs in two or thr

So virulent is Newcastle disease that in many the death rate in ches 100 per ce

---

Chicken Flock To Be Destroyed

WASHINGTON (AP) — A California egg-laying flock of 2.8 million chickens will be destroyed in an effort to curb the spread of exotic New Castle disease, a malady which already has claimed 4.2 million birds in the state, the Agriculture Dept. announced.

The huge flock, comprising about 8 per cent of California's laying hens, was located in Egg City near Moorpark in Ventura County.

Officials said the disease was diagnosed in the Egg City flock. It has been a problem in southern California since last winter when the disease was introduced through a shipment of foreign exotic birds.

The flock is by far the largest to be ordered destroyed under the disease control program. Federal indemnities could run as high as $7 million to Egg City owners, a spokesman said.

The department said exotic New Castle disease, a virus not a hazard to

---

80% against the strain 's flocks. This was perhaps from the year setback. Egg Lonsdale, says it and millions of do ranch back to full pro gram is unfair," says Egg City's veterinarian. "W

pet shop got $2,000 indemnity for a cockatoo that could roller-skate

should immunize these birds, not destroy them." Lonsdale says Egg City's gross revenues last year were $15-million, down from "normal" gross of million to $20-million, and that year the ranch suffered a loss of more than $3-million.

The huge extermination project Egg City began after so-called sentinel birds—chickens raised in a sterile environment and placed in the flock—contracted the ailment. Dr. Allen maintains that the Egg City birds had up resistance to the disease which sentinel birds did not have.

Pet shops have been hurt, too. de Pet in a Los Angeles suburb ceived $13,532 in indemnities birds ordered killed, including for a cockatoo that could roller- Task force officials asked for formance before the bird was

---

Commodities

Poultry Disease Menaces Chicken, Egg Production

BY GEORGE BEARDSLEY

Parrots and myna birds imported from Central and South America have brought with them a new breed of poultry disease which is killing American chickens by attacking their respiratory and central nervous systems.

Currently, this new variety of newcastle disease has been limited to Southern California

and by July, the month of peak demand, Walley said cash prices could be 31 cents a pound.

William Conrad, vice president and general manager of Howard, Weil, Labouisse, Friedrichs, Inc. in Chicago, basically agrees with Walley's projection for cash iced broiler prices but said he wouldn't

rare public address, will discuss the supply and demand picture and international developments affecting wheat. His address will be at a Breadstuffs Seminar to be held April 26 in the Arizona Biltmore Hotel in Phoenix.

The seminar is The Southwest Mill publication.

Importing of Exotic Birds Comes to Screeching Halt

WASHINGTON

Department of Agri a set up a special t Riverside, Cal., to forts to kill affec vaccinate others sease from spr

services are 40 veterinar

Wild Birds and Newcastle

Dreaded Disease is Found in Only a Few of Free-Flying Domestic or Wild Birds

---

Exotic Newcastle threat worsens in California

A NATIONAL agricultural emergency has been de

speakers at ude Dr. Otto r of economics University and

Feelings run high on USDA policy of placing 'sentinels'

USE OF SENTINEL BIRDS cate the last pockets of exotic Newcastle southern California challenged during the October.

Four egg operation Farms, AAA Egg Farms and McAnally E Foods and prises—obtained a temp der to restrain the New

---

End Seen for Chicken Quarantine

ESCONDIDO, Calif (AP) — A U.S. official says Newcastle disease, an exotic virus which reached epidemic proportions in flocks, has been in Southern Califor-

tatement came from e Omohundro, rgency dise for the U.S. Dep culture. Speaki ranchers Tue arantines may e areas.

Chicken Disease Invades Arizona

million chickens and 1.5 million turkeys are still be vaccinated; a May

---

Can Exotic ND Be Eradicated?

WHEN so devastating a disease as velogenic viscerotropic Newcastle breaks out in a commercial poultry area and continues to spread, posing a threat to the nation's poultry industry, the U. S. Department of Agriculture's action quarantining eight southern California counties as expected.

This is almost a replay of Newcastle first

VVND TaskForceWork Vindicated by Results

By JOHN F. YARBROUGH
Publisher

More than two years, a lot of bitterness, agony plus the expenditure of $56 million of Newcastle disease